1975

A morphological study of the naval intelligence community : a new approach to task analysis

Mount, Donald Lee; Sims, Larry Jon

A MORPHOLOGICAL STUDY OF THE NAVAL INTELLIGENCE COMMUNITY - A NEW APPROACH TO TASK ANALYSIS

DONALD LEE MOUNT

NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

A MORPHOLOGICAL STUDY OF THE
NAVAL INTELLIGENCE COMMUNITY –
A NEW APPROACH TO TASK ANALYSIS

by

Donald Lee Mount
William Irving Foster
Elbert William Huber, Jr.
Thomas Riley Watson
Nova Mac Bickell

March 1975

Thesis Advisor: F.M. Teti

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) A Morphological Study of the Naval Intelligence Community — A New Approach to Task Analysis		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis; March 1975
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Donald Lee Mount, William Irving Foster, Elbert William Huber, Jr., Thomas Riley Watson, Nova Mac Bickell		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE March 1975
		13. NUMBER OF PAGES 650
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Naval Intelligence
Morphological Analysis
Delphi Techniques
Task Analysis
Postgraduate Education

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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19. KEY WORDS (Continued)

Subspecialist
Operational Technical Managerial System (OTMS)
Multivariate Analysis of Variance (MANOVA)
Data Base
Educational Requirements
Curriculum Review
Billet Study
Naval Intelligence Organization
Intelligence Personnel
Personnel Survey
Survey
Organization Research
Educational Objectives
Personnel Management
Automation
Data Processing
Questionnaire
Educational Requirements Evaluation
Personal Interview

20. ABSTRACT (Continued)

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The project documentation includes samples of all data-collection instruments utilized, source programs written for data base construction and processing, and a "User's Manual" which provides instructions for accessing the information files.

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by

Donald Lee Mount
Lieutenant Commander, United States Navy
B.A., Naval Postgraduate School, 1973

William Irving Foster
Lieutenant, United States Navy
B.A., University of Virginia, 1965

Elbert William Huber, Jr.
Lieutenant, United States Navy
B.A., University of Texas, 1968

Thomas Riley Watson
Lieutenant, United States Navy
B.A., University of South Carolina, 1969

Nova Mac Bickell
Lieutenant, United States Navy
B.S., University of Illinois, 1970

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF ARTS IN NAVAL INTELLIGENCE

from the

NAVAL POSTGRADUATE SCHOOL
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SUMMARY

The project described in this report was designed to produce a methodology which would make it possible to study and document a diverse group of individuals who have been identified in some way as a work community. The researchers utilized the methodology to study the group of specialist and sub-specialist officers which make up the naval intelligence community. Aspects of this methodology were borrowed from the current literature and were modified to fit the circumstances at hand. The result was a unique set of procedures which could be adapted to apply to a wide range of problem areas associated with the management of such communities.

The three main objectives of the research were: (1) To provide a fresh and unbiased look at the intelligence community to determine what it was and what it did, (2) to form a data base which would be versatile enough to answer a wide range of questions from several fields of interest, and (3) to provide enough generality in procedures to allow the methodology to be adapted to fit many different community applications.

A background description of the community under study was made first, explaining what it was supposed to do and how it fit into the national intelligence organization. Data for this section was available in the open literature, and sources were primarily organizational charters and mission statements published by the organizations within the community. There

[illegible]

was then presented a discussion of morphological analysis, the research scheme which tied the whole project together.

In the morphological approach to analysis, certain parameters are selected within which a wide range of data is collected. As the data develops, they diverge in many different directions. Constraints must be applied to control the amount of data collected within a given parameter and to bring about convergence, or focusing, of data which is relevant to the study. The various solutions which result from this convergence of data can be applied to any number of interest areas, depending on the value criteria the analyst chooses to apply. Careful control of the methodological process can result in a vast data base which has enormous potential. The morphological approach was tied to data collection schemes including questionnaires, interviews, and Delphi instruments, and maximum use was made of available computer resources.

Implementation of the methodological process included developing procedures for the computer generation of data-gathering forms and the subsequent data manipulations necessary when the forms were returned. The research also included study trips to several organizations within the intelligence community and the interviewing of key personnel at each location. As the large amount of raw data was collected, codified, and filed, the morphological description of the community began to take shape and is presented empirically in the extensive appendices of this report. Several methods were suggested for statistical analysis of the data and brief

analyses were carried out in both functional and educational interest areas. The results of these analyses were presented in both verbal and graphical form and can be of interest to manager and educator alike. Careful methodological checks were performed throughout the project, statistically validating both the data and the methods used to collect it.

One of the most important features of this project lies in the fact that it was accepted by the community with overwhelming response. The researchers realized at the beginning that they were dealing with a group of highly specialized professionals and would require their full cooperation in order to conduct a valid study. The data-gathering instruments were therefore designed both to inform the respondents of the project's progress and to solicit the necessary information, while wasting as little time as possible in administrative detail. The researchers gave the population a sense of participation through Delphi feedback techniques and the population rewarded the researchers, in turn, with an unheard of 85% response.

There were several spin-offs from the project and these included new uses for the available computer facilities. The conclusion discussed them, provided ideas for applications of this methodology to other communities, and offered recommendations to anyone who might decide to undertake such a project in the future.

I. THE PROBLEM

A. INTRODUCTION

This research project was precipitated by the establishment of a masters degree program in naval intelligence at the Naval Postgraduate School in Monterey, California. The new curriculum was planned to prepare intelligence specialist and subspecialist officers to meet the growing challenges of an increasingly complex world situation.

A group of students in the curriculum began discussing whether or not it was possible to measure the effectiveness of a course of study. They quickly realized that in order to analyze the value of a curriculum, it was first necessary to learn something about the community with which the curriculum was associated. They recognized that there was no tangible way to measure the effectiveness or value of the Naval Intelligence Curriculum since the status quo of the naval intelligence community had not been effectively documented. The group of researchers then began the adaptation and formulation of a research methodology which would result in an accurate analysis of any specialized group or community.

B. OBJECTIVES OF THE RESEARCH

This research project was designed with three main objectives in mind. These objectives expand outward in their applicability and contributions to knowledge.

[illegible]

1. <u>Primary Objective</u>

The primary objective was to provide a fresh and unbiased look at a group or a community, in this case the Naval Intelligence Community, in an attempt to determine in the most basic terms, what the body is and what it does. Some standard procedures were used in addition to using several relatively new methods for quantifying heretofore unquantifiable attributes and information. A significant amount of data was collected by these combined processes, and in addition to contributing to the task of describing the community, the data were used for statistical analysis in an attempt to discover useful information beyond that which could be derived by more conventional methods.

2. <u>Secondary Objective</u>

A secondary objective of the research project was to initiate procedures for the formation of a complete and exhaustive data base. The information contained in the data base was collected from officers currently occupying related billets and included biographical as well as educational and functional information concerning both the officer and his billet. The ultimate application for this data base, if it is kept current, can be its use as a dynamic measuring device. Not only can it reflect normal day to day changes, it can also monitor and record alterations brought about by such variables as the increasing number of intelligence specialists and subspecialists with postgraduate education entering the

community. As such, the data base can be used not only by the Board of Curriculum Review as a source of empirical data on which to base its judgements concerning curriculum effectiveness, but also by the Director of Naval Intelligence as a source of information concerning the overall status of naval intelligence as a functioning body.

3. Tertiary Objective

This project involved carrying out an analysis directed at a select group of individuals. New methods were developed to handle the gathering of data. New procedures and facilities were designed to enable the statistical manipulation and storage of the data. Since these methods and procedures could easily be modified so that they were applicable to studies in other areas and of other communities, a tertiary objective of this project was to provide an instrument and methodology which could be used by other curricula and by other organizations in similar research efforts.

C. ENVIRONMENTAL CONTEXT OF PROBLEM

Prior to commencing development of methodology and becoming involved in the specifics of the research *per se*, the reader should acquire an understanding of the general structure and scope of the so-called "intelligence community." The term "intelligence" has a variety of meanings, depending upon the context in which it is used. The word can be used to refer to a body of knowledge as well as the actions or processes which

are used by formal organizations to produce that knowledge. The term "community" can refer to the national intelligence organization as being an entity in its own right as well as being the framework within which naval intelligence must operate. The remaining paragraphs in this section discuss the national intelligence organization as this framework and present an overall view of naval intelligence in light of its stated missions and functions.

1. National Intelligence

In its broadest sense, the term "intelligence community" is all-inclusive and refers to the many agencies of the Federal Government which collect information and process it into intelligence. As such, the intelligence community usually includes the Central Intelligence Agency (CIA), the intelligence components of the Department of State, the Department of Defense (DOD), the Defense Intelligence Agency (DIA), the Departments of Army, Navy, and Air Force, the National Security Agency (NSA), the Federal Bureau of Investigation (FBI), and the Atomic Energy Commission (AEC). In some cases, such as that of the Defense Intelligence Agency, intelligence is the sole reason for that organization's existence. In other cases, such as the Atomic Energy Commission or the Department of Defense, intelligence is necessary in order to allow the agency to perform some broader function.

a. Authority

Frequently the intelligence requirements and activities of two or more agencies coincide. When that is the case, special purpose committees coordinate the necessary collection and production efforts. To provide coordination, the National Security Act of 1947, as it has been amended, established the National Security Council (NSC), the Director of Central Intelligence, the Central Intelligence Agency, and indirectly, the Defense Intelligence Agency.

b. Components[1]

(1) National Security Council. The NSC oversees the United States Intelligence Board (USIB) which it created to coordinate the activities of the members of the intelligence community concerning national security. Members from most of the community agencies make up the USIB committees which are permanent in nature and which meet regularly to assess developments in their areas of concern. Acting on the advice of the United States Intelligence Board (USIB), the NSC issues directives which define the roles of the various agencies with respect to coordination of activities under the Director of Central Intelligence.

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[1]This description of the Components of the National Intelligence Organization is a condensation of material found in: Intelligence for Naval Officers – Supplement NAVPERS 10889-C(S), (Washington, D.C.: Naval Personnel Program Support Activity, 1968), pp. 1-23.

(2) Director of Central Intelligence. The Director of Central Intelligence coordinates the activities of the entire intelligence community, acts as the President's principal intelligence advisor, is the head of the CIA, and is chairman of the USIB.

(3) Central Intelligence Agency. The CIA, with the Director of Central Intelligence as its head and under the direction of the NSC, coordinates the activities of the government intelligence departments and agencies as they relate to national security. Its principal duties are to

(a) Advise the NSC and make recommendations concerning intelligence activities and coordination of intelligence activities as they relate to national security.

(b) Correlate and evaluate national security intelligence, providing for dissemination as appropriate.

(c) Perform, for the mutual benefit of all agencies concerned, those common functions which the NSC deems appropriate.

(d) Perform other intelligence related functions and duties as the NSC directs.

(4) Defense Intelligence Agency. The Defense Intelligence Agency (DIA) was established as an agency of the Department of Defense by DOD Directive 5105.21 of 1 August 1961, under provisions of the National Security Act of 1947, as amended. As such, it operates under the direction, authority, and control of the Secretary of Defense. The DIA was established in order to eliminate duplicate intelligence functions and facilities within DOD and to provide for more efficient allocation and management of critical intelligence resources. The functions of DIA are to:

(a) Satisfy the intelligence requirements of the major components of the DOD.

(b) Obtain the maximum economy and efficiency in the allocation and management of DOD intelligence resources.

(c) Review, coordinate, and supervise the execution of all DOD intelligence functions whether they are assigned to the DIA or are retained by or assigned to the military departments.

In general, the functions performed by the DIA are basic and are of interest to all military services. For example, the Defense Intelligence School (DIS) in Washington, D.C. provides various levels of intelligence training for military personnel of all services.

2. Naval Intelligence

If the all-inclusive body of intelligence knowledge is compared to a large pyramid, the tip might represent the most highly refined estimates needed for national policy decisions, and somewhere in the middle cross section would fit naval intelligence, where it converts the flow of raw data into contributions to the total body of knowledge surrounding it. As a segment of the pyramid, naval intelligence utilizes those parts above and below it effecting the successful accomplishment of its assigned responsibilities. It thereby produces intelligence which will directly serve naval commanders in problem solving and decision making, and indirectly contributes to the entire intelligence efforts at the national level.

a. Definition

The term "Naval Intelligence" usually is employed to describe the formal organization that collects, produces, and disseminates intelligence information of naval interest.

b. Components

The Naval Intelligence organization is headed by the Commander, Naval Intelligence Command (COMNAVINTCOM). The Commander, in turn, is a member of the staff organization as Assistant Chief of Naval Operations for Intelligence.

(1) <u>Commander, Naval Intelligence Command</u>. The Office of Naval Intelligence (ONI) was established by the Secretary of the Navy in 1882. Historically, the term ONI has denoted all aspects of naval intelligence including the naval attaché system, naval intelligence postgraduate and language schools, amphibious intelligence, air intelligence, fleet intelligence centers, operational intelligence, commerce, travel, photographic intelligence, scientific intelligence, security policy, telecommunications, censorship, counter-intelligence, and investigations. The Naval Intelligence Command was created by a Navy Department reorganization in 1967.

(a) Mission. To direct and manage the activities of the Naval Intelligence Command to ensure the

fulfillment of the intelligence, counterintelligence, investigative, and security requirements and responsibilities of the Department of the Navy.[2]

(b) Functions. To accomplish this mission, the Commander, Naval Intelligence Command shall:[3]

(1) Command the Headquarters, Naval Intelligence Command (NAVINTCOMHQ) and assigned shore (field) activities.

(2) Direct and coordinate intelligence collection, production, and dissemination to satisfy Department of the Navy intelligence information requirements and Defense Intelligence Agency (DIA) tasking.

(3) Direct the development, management and operation of ocean surveillance information management systems.

(4) Direct Department of the Navy participation in the DOD Intelligence Data Handling System (IDHS) and in the development, management and support of Navy intelligence information systems.

(5) Fulfill the investigative and counterintelligence responsibilities of the Department of the Navy (less those combat related counterintelligence matters within the functional responsibilities of the Marine Corps).

(6) Participate, as appropriate, in matters pertaining to Undersea Warfare intelligence.

(7) Direct intelligence support of the participation in Special Warfare and other designated activities as appropriate.

(8) Act as Navy Special Security Officer (SSO) and manage the systems for the protective handling and dissemination of Special Intelligence and Special Activities materials within the Department of the Navy.

(9) Provide a translation service for the Department of the Navy.

(10) Participate in and provide intelligence inputs to naval, joint and national plans and policies and Navy studies and analyses.

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[2] Naval Intelligence Command Missions and Functions, NAVINTCOMINST 5430.2B dated 10 Oct. 1970, pp. 1,2.

[3] Ibid.

(11) Determine requirements for research, development, test and evaluation of new and improved intelligence equipment and techniques.

(12) Prepare and submit intelligence inputs to Navy Program Objectives Memoranda, Office of the Secretary of Defense functional area reviews, and other pertinent planning and programming documents in collaboration with other appropriate commands and agencies.

(13) Serve as major claimant for the Naval Intelligence Command budget, authorize Expense Operating Budgets (EOB's) to assigned shore (field) activities of the Naval Intelligence Command, and provide guidance to these shore (field) activities relative to the allocation and utilization of funds provided for intelligence, counterintelligence, investigative and security programs.

(14) Inspect and appraise the components of the Naval Intelligence Command to ensure the maintenance of efficiency, discipline, readiness, effectiveness and economy in utilization of assigned resources.

(15) Collaborate in matters relating to the training of personnel and the organizing, training, and equipping of units for assignment to intelligence, counterintelligence, investigative and security duties.

(16) Sponsor requirements for manpower and personnel for designated Navy intelligence activities and functions as sponsor for the Naval Reserve intelligence and Air Intelligence programs; function as the Designator Sponsor for 163X, 662X, and 762X officers and NEC Sponsor for YN-2505 and 9592; and act as Career Program Manager for the Intelligence and Counterintelligence Career Development Programs.

(17) Maintain liaison with the Defense Intelligence Agency, and with other organizations on intelligence matters as required.

(18) Function as the Navy point of contact for Department of the Navy personnel assigned to the Defense Attaché System.

(c) Organization. See Appendix A.

(2) Assistant Chief of Naval Operations (Intelligence). The Director of Naval Intelligence (DNI) is responsible for performing the intelligence functions for the Chief of Naval Operations who is required by Navy Regulations

to "collect, evaluate, and disseminate all types of intelligence information required within the Naval Establishment."[4]

(a) Mission.[5] To implement the responsibilities of the Chief of Naval Operations with regard to intelligence, counterintelligence, investigative and security matters; to serve as the principal staff advisor to the Secretary of the Navy and the Chief of Naval Operations in related plans, programming and policy matters; to represent the Department of the Navy on the United States Intelligence Board and with other agencies in intelligence matters; and to advise and assist officials of the Department of the Navy in matters of protocol and liaison with foreign officials.

(b) Functions.[6]

(1) Exercises for the CNO command responsibility relating to the Naval Intelligence Command.

(2) Formulates policy with regard to counterintelligence and investigative matters within the Department of the Navy.

(3) Exercises overall direction in matters pertaining to the security of military information including the protection and control of classified information, disclosure of classified information to foreign governments and international organizations, the security review of all Navy information proposed for public release and the support of National Censorship and censorship planning.

(4) Provides intelligence staff support to the SECNAV, CNO, VCNO, the DCNOs and DMSOs.

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[4]Intelligence for Naval Officers — Supplement, p. 8.

[5]Missions and Functions of the Director of Naval Intelligence, OPNAVINST 5430.48 dated 26 APR 1974, pp. 1,2.

[6]Ibid.

(5) Participates in the formulation, coordination and evaluation of national, joint and naval intelligence estimates.

(6) Formulates policy with regard to the control, protection, dissemination and use of Special Intelligence and Special Activities materials within the Department of the Navy.

(7) Exercises overall responsibility and authority within the Department of the Navy in matters pertaining to intelligence requirements, collection, production and dissemination, formulates and coordinates related policy; advises concerning intelligence equipment, doctrine and techniques.

(8) Exercises overall coordination and direction in matters pertaining to Undersea Warfare Intelligence and collaborates in the conduct of related special programs with the DCNO (Submarine Warfare).

(9) Sponsors requirements for research, development, test and evaluation of systems, equipment and techniques relating to intelligence, counterintelligence, investigations and security within the Department of the Navy and collaborates on actions to fulfill these requirements. Coordinates and collaborates with the Director, Research, Development, Test and Evaluation in assuring the satisfaction of these requirements.

(10) Coordinates various programs of mutual interest with the Director, Anti-Submarine and Tactical Electro-Magnetic Programs, and appropriate other agencies and offices of the Department of Defense and the Department of the Navy.

(11) Provides a point of contact for liaison with foreign officials accredited to the Department of the Navy and advises and assists on matters relating to protocol and official foreign visitors.

(12) Sponsors the intelligence, counterintelligence, investigative and security of information programs of the Department of the Navy; acts as coordinator for the Navy portion of the General Defense Intelligence Program and sponsor for all but the Mapping, Charting and Geodesy Program element; determines related program objectives, resource requirements and time phasing; and presents and justifies these programs and their supporting budgets including special reviews by the Secretary of Defense for designated intelligence programs.

(13) Participates in the deliberations and activities of the United States Intelligence Board as representative of the Department of the Navy, acts as the Navy member of the Military Intelligence Board and participates in other interdepartmental, Department of Defense and joint service committees as appropriate.

(14) Determines the effectiveness and responsiveness of intelligence, counterintelligence, investigative and security activities to meet current, contingency and mobilization requirements of the Department of the Navy, and collaborates on actions to correct deficiencies.

(15) Collaborates with the Bureau of Naval Personnel in establishing training, career development and maintenance of readiness programs relating to the intelligence, counterintelligence, investigations, and security matters within the Department of the Navy.

(16) Acts as the primary point of contact with DIA, CIA, NSA, FBI, Department of State, the service intelligence agencies, and other foreign and domestic agencies as appropriate on intelligence, counterintelligence, investigations, and security matters; serves as the single point of contact within the Department of the Navy for coordinating the forwarding of Department of the Navy intelligence requirements and for maintaining liaison to ensure their satisfaction.

(c) Organization. See Appendix A.

D. METHODOLOGY

This discussion of methodology takes two parts. First, the selection of an overall methodology, to govern the research and within which to construct the research model, is discussed. Then the discussion turns to the selection of data-gathering techniques employable within the methodology. The governing methodology for this research was morphological analysis.

1. Morphological Analysis

In recent times, the source of new concepts and basic scientific knowledge has consisted not only of the "natural order" but also of the structures and organizations created by

man. The collection of concepts within cybernetics, for instance, were derived jointly from studies of animal nervous systems and man-made control systems. Another powerful methodology was thereby created simply through studying systems "constructed to occupy some of the gaps in the natural order."[7]

The pursuit of any research objective as broad as a "description" of the naval intelligence community demands a methodology which can capitalize on that very broadness. Morphological Analysis, as created by Fritz Zwicky (California Institute of Technology), offers a unique and challenging answer to that problem. The morphological approach concerns itself with the development and practical application of basic methods which will allow the researcher to discover and analyze structures or morphological interrelations among objects, phenomena, and concepts, and to explore the results to be gained.[8] The application of morphological analysis to this research allows great flexibility in data-gathering techniques, since it "uses whatever methodologies are available to arrive at the most complete and unbiased representation of the structure of the problem..."[9]

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[7] F. Zwicky and A. G. Wilson, Eds., New Methods of Thought and Procedure, New York: Springer-Verlag New York, Inc., 1967, p. 302.

[8] Ibid. p. 275.

[9] Ibid. p. 298.

Morphological analysis begins with a clear statement of the problem to be studied. In this research, the problem statement is: Describe the naval intelligence community (see diagram I). Once the assumption is made that there is such a thing as a "naval intelligence community," then there are posed two mutually exclusive hypotheses:

Hypothesis a: The naval intelligence community can be described (in some manner).

Hypothesis b: The naval intelligence community cannot be described (in any manner).

Throughout the research, the identification of elements held in commonality will be the primary means to prove or disprove these qualifying hypotheses.

a. Establishment of Parameters

The next step in the morphological model shown in diagram I is the establishment of parameters to be used in describing the community. This form of analysis requires visualizing all possible interrelations without prejudging the values of any of them. Furthermore, morphology in its proper form takes nothing for granted, but must view all phases and aspects of the problem.[10] The choice of parameters governing the research results in a lengthy list of elements which will later become variables in statistical manipulations. These elements make up the broader parameters:

(1) Organizational Descriptors. Identification of various intelligence organizations, their locations,

[10] Ibid. p. 277.

DIAGRAM I

THE MORPHOLOGICAL APPROACH

Problem Statement

"Describe the naval intelligence community"

Establish the Parameters to be Utilized

Educational *Organizational*

Personal *Functional*

DIVERGENCE

Establish the Constraints on the Research

Methodological *Geographical*

Data-Handling

CONVERGENCE

Apply the Value Criteria

Solution 1

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Solution n

structural components, stated missions, functions, and manning requirements.

(2) Personal Descriptors. Identification and localization of the personnel assigned within naval intelligence; their ages, ranks, and other pertinent biographical data are included in this parameter set.

(3) Functional Descriptors. Identify and describe what the organization within the community, and the billet within the organization, do in terms of functions and outputs.

(4) Educational Descriptors. Identify the educational backgrounds of the personnel assigned to intelligence organizations. These factors include not only educational credits, but levels of expertise gained through experience, as well as formal training.

State-of-the-art methodologies which are used to gather data on these parameters do exist. One such methodology, drawn upon heavily for this research, is task analysis. An important part of the management theory of researchers Henri Fayor and Frederich Taylor was the concept that managers and supervisors at every level should utilize occupational analysis as a tool.[11] This analysis was defined as what, how, and why people did their jobs. The popular

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[11]Robert Butterworth, Task Analysis of U.S. Navy Enlisted Radiomen with Emphasis on Technical Controllers, Master's Thesis, Naval Postgraduate School, Monterey, California, 1973, p. 6.

modern-day term for this procedure is job-analysis, task-analysis, or vocational analysis. Job analysis was employed by the U.S. Army during the first world war as a means of identifying different jobs and assigning them to their proper components. Following the war, educators began employing vocational analysis as the basis for designing formal job training courses whose purpose was preparing students to assume various jobs.

Several methods of task analysis have been developed and attempted. Essentially, these methods fall into two categories, depending on the approach to the study being either task-centered or behavior-centered. The general thrust of the task-centered approach is to disregard the characteristics of the incumbent in the position and only describe the scope and nature of the task involved. Methods involved here include personal interviews, observations, and relating other sources of tasking information to provide general outlines and specific details of ideal task content.[12] The behavior method attempts to describe the task in terms of the behaviors that are necessary and inherent to the successful performance of that particular task. This system basically provides a means of explaining what a person does and how he does it while accomplishing (or failing to accomplish) a

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[12] Walter Charles Mattox, Jr., Job Dimension Analysis of Naval Communications Managers, Dissertation, Naval Postgraduate School, Monterey, March 1973, p. 7-10.

designated task.[13] The methods of task analysis which were modified to suit the purposes of this research lend themselves to computerization and manipulation. Task analysis tends to reduce reliance on subjectiveness and places more emphasis on real data.

Bringing methodologies such as task analysis to bear on the problem of compiling the parameters mentioned above is made more difficult by the reminder that there is a tendency to concentrate on those elements which are easily quantifiable, and ignore those that are difficult to measure, even though their relative weight in the problem may be high.[14] Examples of elements with the descriptive parameters which fit that warning exist mostly among the personnel aspects: attitudes, cooperation and competition levels, prejudices and biases, moral values, and more. Within the methodology the researcher must offset this tendency by incorporating the effects of these elements which cannot be quantifiably expressed.

b. Establishment of Constraints

As the parameters are broken down into component elements (later variables), this stage of the analysis becomes "divergent" (Diagram I). At this point, constraints

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[13]Ibid. p. 8.

[14]Zwicky and Wilson, New Methods of Thought and Procedure, p. 304.

must be imposed to bring the analysis back into line with reality and practicability. The constraints imposed on this research showed their greatest impact on the instruments and actual techniques employed (to be discussed later), but they can be listed generally as:

(1) Methodology and Procedural Constraints. The availability of personnel to data-gathering techniques, applicability of task analysis procedures to this community, and security considerations.

(2) Geographical Constraints. The physical locations of many organizations and billets precluded on-site visits by researchers.

(3) Data-Handling Constraints. Time and computer bank limits required the study to focus on only non-administrative billets within intelligence organizations, and only those with intelligence functions as primary duties (see procedural section).

If the parameter definitions within the model represent the divergent area, then the constraint applications bring about an area of "convergence" (diagram I). It is within this phase of the research that the value criteria underlying the whole project were applied to the data which had been amassed. In keeping with the stated objectives of this project, the data base resulting from a morphological approach such as the one outlined here can be made applicable to any number of value criteria. The data may be viewed in

light of its organizational features, educational elements, or any number of slants and interests. What emerges from the process of problem definition, parameter study, and constraint application, is then a description of the naval intelligence community in the form of a data base able to provide statistically relevant information for a variety of uses.

2. Data Gathering Techniques

One of the objectives of the research was to examine some intelligence aspects which had never before been studied. This would mean collecting and analyzing information which was not recorded anywhere; i.e., intuitive feelings, information carried around in people's heads, information rarely written down and even more rarely compared or discussed with others. The only logical way to get at this information was to question the people involved.

A wide and varied assortment of instruments was available for use. Paramount in the selection of instruments was the requirement to find a compromise between excess complexity and excess brevity; i.e., to provide for the collection of all essential facts without wasting so much of the respondent's time that he became unwilling to cooperate. Another matter which had to be considered in selecting the instruments was the requirement for a format which would not only facilitate data acquisition but would also aid subsequent coding and handling procedures.

Six of the instruments which were considered are listed and discussed below.

a. Questionnaire

A set of questions which is sent to an individual in order to obtain personal and other statistically useful information. The simplicity of a questionnaire lends itself readily to the research since it provides a quick means of gathering base-line and background data.

b. Delphi

A refinement of the questionnaire in that responses to the initial collection effort are collated and returned to the original respondents. The respondents are then asked to re-evaluate their own responses in view of the responses of the overall population. Since the respondents do not have personal contact, there is no chance for pressure to be exerted. This technique is particularly powerful because it provides feedback and promotes continued participation in the project.

c. Brainstorming

A meeting in which all participants are briefed on a problem and then are encouraged to disregard their inhibitions and to express their spontaneous thoughts concerning the topic.

d. Poll

A canvassing of individuals selected by quota or at random in order to obtain opinions for analysis. This

technique is rather vague and general but is often useful for its timeliness and statistical relevance.

e. Interview

A formal consultation, usually on a one-to-one basis, to evaluate some characteristic or aptitude. The drawback of this approach is that it necessitates an on-site visit by the researcher and must therefore be limited by time and expense. The interview is, however, one of the most thorough forms of data gathering available.

f. Participatory Observation

A personal visit with the respondent in which the information collector remains with the respondent through a complete work cycle, observing his routine and recording data as appropriate. As with the interview, the observation requires an on-site visit. The advantages of such a technique usually outweigh that problem, however.

Intrinsic in the selection of the instrument was the selection of the medium to be used. Four possibilities were considered: Personal contact, telephone, mail, and a combination of one or more of these three.

Detailed descriptions of the instruments and media actually employed are given in the next section, RESEARCH PROCEDURES.

3. Data Handling Considerations

Inherent in the morphological approach was the requirement for the collection of vast amounts of data even for a simple case. Because of the complexity of the realm

of intelligence and because of the number of people and billets from which data had to be collected, it was obvious from the beginning that heavy usage of a computer was absolutely essential for the completion of the project. It was recognized though, that the Statistical Package for the Social Sciences (SPSS) program would not be sufficient. For this reason, one individual assumed responsibility for the development and documentation of the required computer programs. Briefly stated, data handling for this project included coding of information, storage within a data file, and the use of standardized programs and methods for statistical manipulations. Additionally, provision was made for computer preparation of the forms and correspondence required for the exchange of data between researchers and population.

II. RESEARCH PROCEDURES

A. ESTABLISHING THE PROBLEM STATEMENT

This research project was initiated to analyze the intelligence community and to arrive at some documentation of its present status. It was assumed that this statement of the status quo could then be used as the base line against which to measure the effectiveness of the new naval intelligence curriculum and its impact on the community. Morphological analysis was the methodology selected to provide the required descriptive material, and the framework on which to build the research.

The first step in a morphological analysis, according to Zwicky, is stated as: "The problem which is to be solved must be exactly formulated."[1] The problem statement for this research was: Describe the naval intelligence community. Immediately, the assumption was made that there indeed was such a thing as a naval intelligence community, and the resulting hypothesis was that the community could somehow be described.

The decision was made to begin the research with the smallest unit in the community, the individual. A request was sent to the Bureau of Naval Personnel for a complete

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[1] Zwicky and Wilson, New Methods of Thought and Procedure, p. 285.

listing of all those personnel who were occupying intelligence billets. A billet listing containing 1040 entries was received, and from this list the sample population was selected.

Prior to beginning the billet selection process the researchers imposed several constraints in order to control the volume of data about to be collected and for other reasons which will be discussed later. In addition, the parameters within which the description was to take place, were established.

B. PARAMETERS AND VARIABLES

In his description of the morphological method, Fritz Zwicky lists as the second step the identification of the problem's parameters: "All of the parameters which might enter into the solution of the given problem must be localized and characterized."[2] The next stage of the research called for masses of data to be collected against the naval intelligence community; data that in some way could help in the description of the community. To handle this data efficiently and to put it into a form easily manageable by the available data processing equipment,[3] the variables to be collected were characterized and organized into four broad parameter groups.

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[2]Ibid. p. 285.

[3]A complete discussion of the data processing involved in the research can be found in sections IV and V and the appropriate appendices.

During the variable selection process, emphasis was placed on seeking those variables which could provide data to more than one parameter area. As well as applying to as many of the four parameter groups as possible, the individual variables were also selected with consideration for how they were to be collected. Collection requirements within the four parameter areas (organizational, personal, functional, and educational), as well as the variables themselves, are discussed below.

1. The Organizational Parameter

The morphological description of the community required, after the initial Bureau of Personnel billet listing, an accurate listing of the organizations officially existing within the community. The variables within the organizational parameter were selected for their usefulness in identifying, naming, locating, and characterizing the various commands under study.

a. Variables Within the Parameter

(1) Command Name (VAR001). The organizations were identified first by their command name. The list of commands to be addressed in the research was generated after a process involving various external and internal constraints (discussed later) and included 119 separate organizations.

(2) Billet Sequence Code (VAR002). A number, known as a Billet Sequence Code (BSC) is assigned to each billet in a naval organization. VAR002 was used as one method

of identifying and addressing a billet within an organization by referencing the appropriate BSC.

(3) Billet Title (VAR003). The billet titles collected exhibited some similarity from one organization to another, but were not necessarily compatible across the community. A title can tell a great deal about a billet in one place and very little about the billet somewhere else so no effort was made to name billets in any particular manner.

(4) Unit Identification Code (VAR004). A Unit Identification Code (UIC) is assigned to every naval command as a means of identifying individual commands numerically. VAR004 was used in the data file as another convenient way in which to address individual commands within the population. VAR004 was also keyed to a file of individual command mailing addresses to facilitate postal procedures for the research.

(5) CONUS or Overseas Code (VAR005). This code was assigned within the file to indicate the general locations of the organizations, grouping them into rough geographical areas: CONUS (continental United States), Europe, Pacific area, Atlantic-Mediterranean afloat, and Pacific afloat.

(6) Country Code (VAR006). The country code designated the state (if in CONUS) or the country in which the organization was located. It was thought that the UIC (VAR004) would be used for clerical purposes, while the CONUS code and this code would be used for analytical purposes.

(7) Billet Subspeciality (VAR016). This organizational variable identified those billets within a command that have been designated as "P-coded", or assigned a sub-specialist manning requirement. The sub-speciality codes are assigned by the Bureau of Naval Personnel. The billets so designated require an officer to fill them who holds a sub-speciality, usually gained through graduate education. The capability for identification of such billets within the organizations studied was thought to be valuable to the research.

(8) Comments (VAR083). Throughout the data-gathering stages of this project, emphasis was placed on soliciting and recording pertinent comments from the population regarding subjects of interest to the research. The comments regarding organizational factors were condensed and recorded as addressable variables.

b. Structural Analysis

The gathering of organizational data required an understanding first, of how the organizations were structured internally and second, how they fit into the overall intelligence structure.

A feature common to the various commands studied during the research period was the propensity for periodic reorganization. During the course of the project, several major reorganizations took place: In the Pacific area, several complete intelligence organizations and many integral

parts of others combined into the joint-service agency known as Intelligence Center Pacific (IPAC), located in Camp Smith, Hawaii. The Fleet Intelligence Center Atlantic (FICLANT) and the Fleet Intelligence Center Europe (FICEUR) began the process of merger on the east coast. Finally, the Headquarters Naval Intelligence Command (NAVINTCOM) itself began to reorganize. This fluidity in the community made the production of a structural analysis (a process by which the organizational blueprint of a specific command is recorded) difficult at best. The structural diagrams applicable (at this writing) to the commands addressed are contained in Appendix A.

The process of structural analysis normally is a relatively simple one requiring only the collection of organizational diagrams and applicable instructions from the various commands and assembling them in accordance with stated relationships. This process may more accurately be called "formal" structural analysis, since it produces the formal, legal blueprint of an organization. A more imprecise and difficult analytical process is that which attempts to define what might be called the "informal" structure within an organization. The informal structure may not necessarily follow any formalized structural guides but characteristically transcends such guides. The informal structure within a command is usually based on personalities and on trust, respect, and mutual confidence among key personnel. The officers occupying key slots in the structure are usually the

organization's most productive and competent. Since this research depended so much on individuals for data-gathering, it was very important that the informal structures be identified as accurately as possible and that billets selected for special study within a command be among those considered by the informal structure as important to the organization's mission success. The process of identifying those billets, usually by personal discussions with organization members, is the process of informal structural analysis itself. The researchers found virtually no way of identifying the informal structure except through personal interviews and discussions. Analysis was limited to those commands actually visited by research team members and was basically carried out as a part of the key-billet interviews discussed below. The identification of the informal structure within each command visited proved to be impossible for many large commands although it usually was possible in the smaller organizations. Whenever possible, informal structural analysis complemented the formal analysis, especially in the selection of billets for further interviews.

c. Techniques Employed in Data-Gathering

Collection of data against the organizational parameter was the most straightforward of all. The data were available from several sources, publications as well as personnel, and were the easiest to verify. The variables within this parameter were collected by library and archival research, and by the techniques of questionnaire and interview. Samples of the data-gathering instruments used are found in Appendix B.

(1) Questionnaire. Many of the questions posed in the preliminary questionnaire dealt with organizational data. The questionnaire which was sent out to the selected organizations and their billets of interest, served as the research's first contact with the population. It aimed primarily at the command's location, the billet itself and where it fell within the organization, and of course at the officer who occupied the billet. Questionnaire data supplied the values for variables 001 (command name), 002 (billet sequence code), 003 (billet title), 016 (billet subspeciality), and 083 (comments). Organizational data collected by the questionnaire also weighed in the decisions made later regarding billets to be interviewed during the on-site visits.

(2) Interviews. The interviews conducted on-site, while not necessarily providing specific data for the organizational variables, were invaluable for the informal structural analysis attempted by the researchers. Through the interviews, the researchers often gained an understanding of the organization and how it related to the rest of the community. This information was very important to the project. Comments regarding organizational alterations, proposed or carried out, were recorded along with the other parameter data gathered in the interviews.

2. <u>The Personal Parameter</u>

The personal (or biographical) data collected in this research was, from the beginning, to be kept at the minimum required to complete the analysis. Since most of the data-gathering techniques involved a degree of respondent participation, it was felt that questions involving sensitive and unnecessary personal facts should be avoided. As a result, the variables within the personal parameter describe the individual only in light of his education, his organizational location, and the career path he has followed.

a. Variables Within the Parameter

(1) <u>Name</u> (VAR010). Self explanatory variable.

(2) <u>Billet Title</u> (VAR003). The billet titles varied from command to command, and many billets with the same titles often had very different functions.

(3) <u>Rank</u> (VAR011). One of the constraints imposed upon the research was the limit placed on rank. For reasons discussed elsewhere in this paper it was decided to limit queries to billets requiring ranks Lieutenant Commander and above, although this was later amended to include some junior officers where conditions warranted.

(4) <u>Age</u> (VAR012). Self explanatory variable.

(5) <u>Designator</u> (VAR013), <u>Previous Designator</u> (VAR014), and <u>First Designator</u> (VAR015). The designator is a numerical code assigned to officers by the Bureau of Naval Personnel. It reflects their warfare speciality (surface

warfare, aviation, intelligence, etc.). As an officer progresses through his career his designator usually changes at least once, reflecting advancement within a speciality, augmentation, and other changes. The three-variable designator history proved to be valuable to the research.

(6) Subspecialty Code (VAR017). The sub-speciality code, another numerical code assigned by the Bureau of Naval Personnel, is granted to officers completing advanced education in any one of several fields. The subspecialty code, or "P-code" is usually a product of postgraduate education, and as noted in the Organizational Parameter section, can be required for specific billets.

(7) Educational Level (VAR018). This was set up in the data base as a one-digit code reflecting the officer's educational achievement: 0 = less than a bachelor's level, 1 = bachelor's level, 2 = postgraduate studies, 3 = VAR207 (below), 4 = master's level, and 5 = doctoral level studies.

(8) Training Used in Present Billet (VAR019). This five-digit variable was coded to a number of sources of specialized training that the respondent may be drawing upon in his present billet. A complete list of the variable values is given below in the discussion of the Educational Parameter.

(9) Defense Intelligence School Graduate (VAR207). In addition to the information contained in VAR019 above, the population was queried to locate all graduates of the DIS and

its precursor, the Naval Intelligence School, Anacostia, Maryland (NIS).

(10) First Intelligence Billet (VAR020). This variable identified those officers occupying their first intelligence billet.

(11) Years Experience (VAR021). This variable recorded the total number of years of intelligence experience the respondent had accumulated.

(12) Months in this Billet (VAR022). To properly evaluate a respondent's comments and remarks, data concerning his time in the billet was recorded.

b. Biographics Impact

A measure of the flexibility of the research project presented itself when one of the respondents was transferred. Since follow-up Delphi instruments were individually mailed to respondents, they followed those officers who had been transferred to other organizations. This not only gave the research more depth in the total number of billet cases available for file, but led to the idea of maintaining a listing of key officers in the community and their locations, with a periodic update feature incorporated. This listing was not meant to duplicate efforts underway at the Bureau of Naval Personnel, but rather to be integrated with the file of billets and thus add to the project's capability to provide a means for dynamic measure.

c. Techniques Employed in Data-Gathering

The personal information required by the research was kept at a minimum in order to facilitate its collection. The researchers did not foresee building up a file of complete biographies but rather collecting just those variables which would prove to be statistically relevant for analysis. As in the case of the Organizational Parameter, the data collection techniques were to combine thoroughness with ease of completion.

(1) Questionnaire. Much of the personal data collected was gathered from the questionnaire sent out at the beginning of the project. The personal variables appeared in logical sequence with the organizational variables, and only one questionnaire was returned with a stated objection to the information requested.[4] Questionnaire data supplied billet title (VAR003), name (VAR010), rank (VAR011), age (VAR012), designator history (VAR013 through VAR015), subspecialty code (VAR017), educational level (VAR018), training used (VAR019), intelligence billet experience (VAR020 through VAR022), DIS/NIS tours (VAR207), and finally, comments (VAR083). The personal variables requested on the questionnaire integrated well with the organizational and educational variables and many served more than one parameter.

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[4] The requested information was provided, however.

(2) Interview. Questionnaire data from those billets selected for on-site interviews were screened carefully during the selection process. Preliminary structural analysis of the parent organization was performed. The interviews then provided an effective device for checking and clarifying the background data gathered by the questionnaires. The interviewer used the preliminary statistics gained from the questionnaires' personal data to discuss those areas that seemed to be significant in the billet holders' careers. Designator histories and specialized training used in the billet were two examples of personal variables discussed and corrected in the interviews. The opportunity for error checking and clarification afforded by the interviews proved so valuable that it was decided to include all the previously submitted questionnaire data (from all parameters) on successive Delphi iterations, to allow the entire population to review and update the files.

3. The Functional Parameter

a. The Modification of Task Analysis

Although concepts of task analysis formed the core of this parameter's research methodology, they could not be applied too literally. Methodologies already in existence were not directly applicable because of security problems, lack of commonality of "tasks", and general ill-fitting methodological design. What was substituted was a modification of task analysis which might more aptly be called functional analysis. Where the former stresses a study of the task as a unit of

work, functional analysis focuses on functional outputs of analytical or logical processes. A description of the intelligence community in terms of its outputs seemed appropriate and more easily obtainable without the detail demanded by task analysis methodologies. Most of the variables against which data was collected within this parameter made up the community's "output list".

b. Variables Within the Parameter

(1) Billet Title (VAR003).

(2) Rank (VAR011).

(3) Designator (VAR013).

(4) Billet Subspecialty (VAR016).

(5) Training Used in the Billet (VAR019).

The functional description of the intelligence community was begun by submitting to the population, via a Delphi, a list of intelligence functions or outputs. Each respondent was asked to indicate by a percentage the amount of his work time which was spent on each of the applicable outputs. Outputs important to the billet but not appearing on the list were also solicited. The list of outputs as it was published in the first iteration of Delphi "A" was created by a group of intelligence specialists locally and included:

(6) Administration of Intelligence Office (VAR025).

This output variable refers to the mundane tasks required to operate and manage an office. Examples include the verification of clearances and the indoctrination

of personnel in the security aspects of intelligence work. This category provides little if any substantive intelligence information.

(7) Briefs and Debriefs (VAR027). This variable represents the percentage of time spent in both the preparation and performance of prepared and extemporaneous briefings. The prepared briefs are those in which technical and analytical specialists prepare written textual copy as an input for delivery by a professional briefer. Debriefs are somewhat akin to briefs except that they operate in the reverse direction. A debrief would normally not be a function of a stateside intelligence office. However, some debriefing may be carried on at the Washington level in working with defectors or in questioning dissident personnel. The majority of the debriefs of the intelligence officer would be conducted in the field in order to obtain data from an operational intelligence collection mission such as an aircraft surveillance of Soviet merchant shipping in the vicinity of the continental United States.

(8) Budgets and Budgeting (VAR029). Budget estimates are required to support requests for funds to finance various aspects of the intelligence collection and reporting process.

(9) Charts and Visual Aids (VAR031). The preparation of these instruments often requires close attention from officers responsible for them.

(10) Counterintelligence Studies (VAR033). This output variable referred to the collection, codification, and dissemination of information concerning espionage, subversion, and sabotage activities pertinent to naval functions.

(11) Data Analysis (VAR035). Data which has been collected by various means normally is of little use until after a process of scientific and intuitive compilation. This variable recorded the amount of time spent in making data useful for the next consumer.

(12) Decisions and Recommendations (VAR037). This output variable referred to the amount of time the respondent spent in the decision-making process or in formulating recommendations for superiors.

(13) Estimates (VAR039). The estimates function included the process of making predictions based on available data.

(14) Intelligence Annexes to Operation Orders (VAR041). This output included the initial preparation of updating of the written intelligence Annex to Operation Orders being compiled or revised. The Annex often presents a general overview of the political, military, and economic aspects of a given operation.

(15) Intelligence Collection Plans (VAR043). This variable recorded the time spent in advanced planning and the policy formulation used in operational intelligence collection missions.

(16) Intelligence Collection Tasking (VAR045). Tasking referred to the dissemination of guidance to intelligence collection groups.

(17) Intelligence Information Reports (VAR047). The most common information transmittal document in the intelligence business also required a great deal of time to complete. This variable recorded time spent both on the form itself and the background reading and research process that went into it.

(18) Intelligence Studies (VAR049). These studies consume a large portion of time and are involved mostly with background review and research.

(19) Interface With Automatic Data Processing and Telecommunications Equipments (VAR051). The intelligence organizations addressed all had many connections with such equipments, and this variable recorded the amount of time spent in the ADP interface.

(20) Order of Battle (OB) (VAR053). The variable recorded time spent in the preparation and update of various OB plots and publications.

(21) Physical Security (VAR055). This function referred to the considerations of safeguarding classified material and equipment.

(22) Tactical Plots (VAR057). These plots are the real-time situation plots presenting information, usually in visual form, for decision makers. The variable recorded the amount of time spent in their preparation and updates.

(23) Other Outputs to be Added (VAR063,066,071, 074,079). These variables recorded the names and amounts of time of additional outputs added to the original list by the population. This list of variables enabled the researchers to modify the outputs for the second iteration of the Delphi (Delphi A2).

(24) Non-Intelligence Output (VAR080). This variable recorded that amount of time devoted by intelligence officers to functions not directly related to their specialty.

(25) Comments (VAR083). As with the other parameters, respondents utilized the comments variable to add additional information regarding the Functional Parameter.

c. The Second Iteration of Delphi A (Delphi A2)

As the responses to the first iteration of Delphi A were returned, it became apparent that the list of outputs had not included a few important items, and had included some that were no longer applicable. Using the additional outputs generated by the population responses, a new list of outputs was prepared to be submitted in the second iteration of Delphi A. The list included not only new outputs, but clarifications and some combinations of the old:

(26) Administration of Intelligence Office (VAR187).

(27) Resource/Organizational Management (VAR188).

(28) Budgeting and Fiscal Planning (VAR189).

(29) Decisions and Recommendations (VAR190).

(30) Briefs and Debriefs (VAR191).

(31) Liaison (VAR192).

(32) <u>Charts and Audio-Visual Aids</u> (VAR193).

(33) <u>Counterintelligence Studies</u> (VAR194).

(34) <u>Data Analysis</u> (VAR195).

(35) <u>Estimates</u> (VAR196).

(36) <u>Intelligence Annexes to OPORDS</u> (VAR197).

(37) <u>Intelligence Collection Plans</u> (VAR198).

(38) <u>Intelligence Collection Tasking</u> (VAR199).

(39) <u>Intelligence Information Reports</u> (VAR200).

(40) <u>Interface With ADP/Telecommunications</u> (VAR201).

(41) <u>Orders of Battle</u> (VAR202).

(42) <u>Physical Security</u> (VAR203).

(43) <u>Tactical Plots</u> (VAR204).

(44) <u>Non-Intelligence Related Outputs</u> (VAR205).

(45) <u>Counseling/Training</u> (VAR206).

In addition to the new list, individuals who added outputs originally for which there were no new categories on the second list were asked to break them down into component outputs which did appear on the list. In the second iteration of Delphi A, a respondent who had added "Daily Intell Summary Messages" to the first list was asked to break that down into "Data Analysis" and "Estimates"; by this convention, and by providing the respondents with both their individual statistics and the population aggregate statistics recorded on the first iteration, it was hoped that a consensus of intelligence outputs could be reached.

d. Techniques Employed in Data-Gathering

(1) Delphi A. The first Delphi instrument generated by this research dealt with functional outputs. The population was presented with a list of several intelligence-related functional outputs and a special category for non-intelligence related outputs and was asked to indicate the percentage of time each applicable output consumed in the normal work routine. These figures were then combined to reflect the population's average for each output applicable to the various billets and were resubmitted for a second iteration. The second iteration of Delphi A was constructed based on inputs received from the first iteration. The statistics proved to be closer to consensus.[5]

(2) Interviews. The billets selected for interviews were selected in accordance with the time allocations gained from the first iteration of Delphi A. The functional data provided by Delphi A aided the process of structural analysis and gave the interviewer a background upon which to base his questions. Unfortunately, the on-site interviews had to be carried out prior to the completion of Delphi A2.

The interviews themselves served to clarify Functional Parameter data and allowed the interviewer, in many cases, to gain added insight into the billet and about the officer holding it.

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[5]See Presentation of Data.

4. <u>The Educational Parameter</u>

The final parameter applied to this morphological analysis, the Educational Parameter, was the one containing the greatest degree of direct applicability. The importance rested on the project's usefulness as a tool for the Board of Curriculum Review which was to study the Naval Intelligence Curriculum at the Naval Postgraduate School. If, in its description of the community, the project shed light on the present (and future) educational picture existing there, then it would prove invaluable to the board. The variables collected within this parameter were meant to describe the community's educational status, and tie it to the educational programs available within the service.

a. <u>Variables Within the Parameter</u>

(1) <u>Age</u> (VAR012).

(2) <u>Billet Subspecialty</u> (VAR016).

(3) <u>Respondent Subspecialty</u> (VAR017).

(4) <u>Educational Level</u> (VAR018).

(5) <u>Comments</u> (VAR083). Many of the comments received from the first questionnaire concerned the Educational Parameter. The respondents assumed that the questionnaire was slanted toward education since the project originated at NPS.

(6) <u>DIS/NIS Graduate</u> (VAR207).

(7) <u>Training Used in this Billet</u> (VAR019). This variable was coded, in accordance with the key below, after the information was received from the questionnaires and

interviews. The variable, containing a five-digit field, allowed for many combinations of the codes:

"1" = respondent has previous intelligence experience

"2" = respondent has previous military experience (other than intelligence related experience)

"3" = respondent has attended Defense Intelligence School or its predecessor, the Naval Intelligence School

"4" = respondent has photographic interpretation or photographic experience

"5" = respondent has attended intelligence training courses such as those given at the FITC's or at LOWRY AFB

"6" = respondent has foreign language training, regardless of whether obtained through the military or other means

"7" = respondent has ADP experience (either afloat or ashore) or training relating to ADP

"8" = respondent has obtained professional military education (as opposed to civilian education). Examples are the various war and staff colleges.

"9" = respondent has obtained professional training (as opposed to education) other than intelligence related training; examples are nuclear weapons/nuclear technology, FAAWTC's, destroyer school, submarine school, sensor management courses, etc.).

b. Educational Subject Areas

A major thrust of the interviews and the primary aim of Delphi B were to arrive at the degree of utilization throughout the community of several educational subject areas. With each applicable subject area discussed in the interviews (and later submitted on Delphi B to the entire population), the researchers attempted to arrive at estimates of: The level which the respondent actually used in his work, the level which he felt he needed in order to do things more easily or efficiently, and the level which he estimated to be necessary ten years from the present. There were four levels differentiated:

"1" = No need, or no contact with the subject area.

"2" = Basic knowledge, an appreciation of the major concepts.

"3" = Working knowledge, sufficiently familiar with the topic to discuss it with an expert, or arrange for work to be done within the area.

"4" = Expert or theoretical knowledge.

The educational subject areas were:

(1) Mathematics. Including college algebra, calculus, probability and statistics, and advanced calculus.

(2) Area Studies. Including the USSR, China, Mid-East, Europe, Latin America, and Africa.

(3) Foreign Language.

(4) Naval Science. Including underwater acoustics, sonar systems, communications, radar systems, optics, and laser systems.

(5) Operations Analysis.

(6) International Relations Theory.

(7) National/Naval Budgeting Process.

(8) Threat Assessment.

(9) National Security/Intelligence Organization.

(10) Red Forces. This subject area included studies of naval, air, and ground forces belonging to "Red", and additionally, Strategic Rocket Troops and Merchant/Fishing/Oceanographic forces.

(11) Blue Forces. Including naval forces, both strategic and general purpose, and forces of other services and of allies.

(12) ADP. Including system design, management, hardware operation, software operation, and basic interface.

(13) Communication Skills. Including briefing, writing, and organization of thought.

(14) Management. Including collection system management, PERT, management by objectives, personnel and financial management, and labor relations.

c. Techniques Employed in the Data-Gathering

The Educational Parameter was the principal subject of Delphi B, and shared equal time in the interviews with the Organizational Parameter. The primary aim of data-gathering for this parameter was to develop statistics, via the interviews, and to present them in Delphi form for population response.

(1) Interviews. The on-site interviews gave the researchers excellent opportunities to discuss education and what it meant to the officers interviewed. Each educational area listed above was discussed in terms of its application to the individual and his billet. Besides arriving at an estimate of the level used by the respondent, the interviewer also assessed the level that was needed, be it higher or lower than the one used. The Educational Parameter data gathered in the interviews was presented to the population in the second Delphi, Delphi B.

(2) Delphi B. The educational Delphi was submitted to the community following the return of Delphi A which was the functional area instrument. It was felt that an

introduction to the Delphi method should be made first, to insure that the more complex educational Delphi would be treated properly by the population. Delphi B presented the aggregate figures from the interview statistics and asked the respondents to rate, in light of the interviews, their own levels, used and needed, for each applicable subject area. As an added feature (demonstrating, incidentally, the flexibility of this instrument), the respondents were asked to project, based on trends they sensed within their spheres, the educational level for each subject that would be required in that billet ten years hence. As in the functional Delphi (Delphi A and A2), it was recognized that not all respondents would be able to find applicability in all the subject areas. They were asked to respond to those that did apply.

5. Area of Divergence

As the problem statement was broken down into proposed parameter areas (organizational, personal, functional, and educational) and as these areas were in turn broken down into variables, about which information was to be collected (billet titles, ages, percentages of time per output, levels of mathematics used, etc.), the data began to diverge. This process, of amassing data from a population which consisted initially of more than a thousand, was a task that could very easily have caused one to lose sight of the project's objectives. As each instrument was developed and implemented, as the data was compiled and filed, and as the research moved

from one stage to the next, divergence was partially compensated for by externally applied constraints. This divergence of data, of hundreds of unrelated variables, had to be better controlled. Otherwise things would begin to shift and soon the data's cart would be pulling the research project's horse. The answer to this dilemma, a set of controls, consisted of a series of constraints which was applied to the analysis by the researchers.

III. RESEARCH PROCEDURES: THE CONSTRAINTS

A. CONSTRAINTS

As the research progressed, two forms of constraint became obvious. The first form consisted of constraints applied to the project by the researchers. The second form consisted of constraints imposed upon the project by outside factors.

The need for the first form of constraint became obvious as the problem statement was broken down into component parameters and the parameters were further broken into variables. In view of the number of organizations, the number of billets, and the number of people available to fill them, and considering the potential volume of detailed information which could be collected about each one, it soon became obvious that the project was in danger of geometric expansion. Severe constraints were necessary in order to keep the project within the limits of reality and practicality.

The reality of the second form of constraint became obvious as planning for the research progressed. Because of the nature of intelligence and because of the environment in which it is produced, there was automatically established a rigid framework within which any research had to be conducted. This framework had a great impact on the instruments and on the actual techniques used.

The constraints fell into three general areas: Methodological and Procedural, Geographical, and Data Handling. The constraints served to arrest the tendency toward geometric expansion, thereby limiting the size of the project and converging the research into a concise yet detailed description of the area being studied.

1. Methodological and Procedural Constraints

The methodology and procedures were affected by both types of constraint. Numbers and time affected the choice of instruments. Numbers and qualifications affected the selection of billets for study. Security considerations imposed rigid restrictions. The combination of all these factors necessitated a significant modification of the original formal task analysis procedures.

a. Choice of Instruments

More than 1000 billets were available for study. These billets covered a wide range of jobs and personalities. The researchers realized that intelligence officers, like most other active-duty personnel, usually have very limited amounts of time to devote to non-essential activities. They therefore knew that whatever instruments were selected for use would have to require a minimum amount of the respondent's time. Otherwise there would be no hope of having a significant number of people participate in the project.

Time, then, became an overriding consideration in planning the instruments which would be used. Complex instruments, requiring countless answers to long and detailed

lists of questions or time-consuming essays on many and varied topics, might be suitable for a conscientious academic but would clearly be out of place for an overburdened military officer. As a result of the time considerations, every effort was made to select instruments which would take as little time as possible for completion. The goal was to use instruments which consumed no more than ten minutes at a time.

b. Identification and Availability of Billets for Study

The thrust of the research was toward individual billets within organizations which contribute to the naval intelligence effort rather than toward the organizations themselves. Therefore the billets which were selected for the project were those in which the individual performed an intelligence job as a primary duty.

The billets to be addressed in the research were filled by naval officers, normally lieutenant commander (0-4) and above. Civilian personnel involved with naval intelligence were not included in the study. The decision to begin with officers 0-4 and above was made in recognition of the facts that a postgraduate education is normally within an officer's career pattern by that stage of his career, and that the majority of the more junior officers in intelligence have been trained for very specific skills. The junior billets, existing just below the level of middle management, are restricted primarily to specific intelligence skills such as photo interpretation and watch-standing; skills which must be

learned elsewhere and not in graduate school. The restriction on rank also of necessity eliminated many ship and squadron billets from the research. In most of those units though, the billet of Intelligence Officer exists only as a collateral duty. With the above constraints in mind, the project was initiated with a request to the Bureau of Naval Personnel for a computer print-out of all intelligence billets occupied by officers of the rank of 0-4 or higher.

A careful screening of the resultant print-out was conducted. Billets which were primarily administrative in nature, even though filled by intelligence officers, were eliminated. These included such billets as Special Security Officer (SSO) and Special Activities Officer (SAO), whose primary duties were purely administrative, and were thus of little interest to the study. Other billets eliminated from the study were those in communications, supply, the defense attaché system, and certain sensitive billets.

Left in the study were billets occupied by officers on their first intelligence tours. The decision to include them was made because so much of the community consists of personnel with little or no intelligence experience. Many of these billets will eventually be filled by graduates of the intelligence program at the Naval Postgraduate School or of other postgraduate programs.

c. Security Considerations

It was realized from the very beginning that a study of any intelligence activity would be complicated by the fact that proper security would have to be provided for any classified material which was collected. The problem of security is particularly difficult in a purely academic environment such as the one at the Naval Postgraduate School.

First of all, it was realized that there was no hope whatsoever of justifying student researcher access to any of the highly classified compartmented areas of naval or national intelligence. Even if access had been possible, problems of sanitization and handling would have made collection of the information most unwieldy. In addition, proper storage facilities were unavailable and the computer center was in a completely insecure environment. An even more important consideration, from the academic standpoint, was the fact that a highly classified final product would be of no use to the very people for whom it was intended.

For all these reasons, it was decided to keep all research on a completely unclassified level. It was felt that such procedures would in no way detract from the validity or usefulness of the final product. In fact, an unclassified project could be much more versatile and comprehensive than a classified one. The functional parameter area was the most threatened by security restrictions and that was a contributing factor to the failure of task analysis as a methodology useful to the research.

With these considerations in mind, the original listing of billets was studied for potential problem areas. Sensitive billets such as those in the defense attaché system and those involved in clandestine activity were eliminated from consideration. The numbers involved were so small that they were not felt to be significant enough to affect the validity of the overall project. The billets remaining were all billets which could be discussed in unclassified terms with no problems of political or other overtones. The actual data which were collected were in such general terms that there were no insurmountable problems of classification.

The only real security problems encountered in the project occurred during the personal interview phase of research in Washington, Norfolk, and Hawaii. The researchers had final top secret clearances with access to Special Intelligence (S.I.) information. Many of the people the interviewers wanted to talk to worked in spaces requiring compartmented intelligence clearances for access. Since most of the more meaningful interviews were conducted as the interviewee went about his daily routine, access to and meaningful interviews with many people were impossible. The two areas of most concern were at the Defense Intelligence Agency (DIA) and at the Naval Intelligence Support Center (NISC) where most of the key personnel work in spaces with access barred to the interviewers. As a result, it was not possible for the interviewers to talk to all of the people who had been

previously selected as the best candidates for interviews. All too frequently it was necessary to talk to someone else who happened to be more convenient at the time. In addition to disrupting planned interview procedures, this constraint on access also meant the loss of participatory observation as a research tool.

d. Applicability of Task Analysis

During the past thirty years task analysis has become an important tool in management. It has proven its usefulness in the human and material resources management for more efficient and effective production of both goods and services. However, task analysis has not attracted much attention in the field of formal education. Although educational institutions deal with the management of human and material resources and do produce both goods and services, they usually rely upon a more traditional approach.

The traditional approach has been based upon intuitive feelings gained through: (1) past educational experiences, (2) conversations and meetings with professional personnel from industrial and research projects, performing consulting services, and actually working in industrial institutions. Although this approach may not have been inherently bad, it was limited by how current these experiences were.

The Naval Postgraduate School is a unique institution in that it not only must provide the educational background

commensurate with traditional concepts, but it must also tailor different programs to the naval environment. Herein lie both a strength and a weakness of the above approach. Close and frequent affiliation with the naval environment is inherent in it. On the other hand, this association is not always related to day-to-day problems. The information that is received is more likely gained through a middleman within the shore establishment. Accuracy may therefore suffer.

Task analysis can provide information directly from and about the operator without extensive personal contact. It does not provide the solutions. It can, however, provide information which can be drawn upon to bolster a sound decision-making process. It lends itself to computerization and manipulation to facilitate the examination of specific areas of study. Task analysis tends to reduce reliance on subjectiveness. It places more emphasis on empirical data. Task analysis then, from its description, appeared to be the perfect vehicle for the research project.

Conducting a formal task analysis proved to be too difficult in view of the constraints which were imposed upon the project by outside forces or by factors beyond the control of the researchers. Task analysis techniques are very involved and require a thorough understanding of a lengthy list of precise terms and procedures. In order to conduct the analysis, someone at the research site, either the participants or the researchers themselves, must have this

understanding. In the intelligence environment, this constraint proved to be insurmountable. The terms and procedures were deemed too complex to try to convey to the participants in order to get a satisfactory response. (Some of these considerations have already been discussed above.) Geographical and fiscal factors as well as time (also discussed elsewhere) precluded researcher visits to all of the sites. Even when a visit and an interview were possible, security considerations frequently made it impossible to go into sufficient detail to make a legitimate task analysis possible. The resulting data would probably have been sufficiently general to allow expression in an unclassified format but the steps necessary to reach these distilled data required access to information for which the researchers were not eligible. A significant alteration to formal task analysis procedures was necessary. As a result, a less precise, but nonetheless valid functional analysis was substituted, as outlined earlier during the discussion of the Functional Parameter.

2. Geographical Constraints

Since naval intelligence is a world-wide organization, and since the researchers were so few in number, and since research funds were so limited, sheer distances posed a dilemma. The members of the research team decided to try to simplify the options of the dilemma by dividing the vast geographical expanse into three response areas. Such a

division would still allow the gathering of sufficient detail while at the same time making it possible for team members to personally visit each area. The division decision was subjective but was based on approximations of the numbers of billets physically located in each of the three areas and on the amount of travel money available. These three areas were: Washington, Norfolk, and Pearl Harbor.

a. Washington, D. C. Area

The Washington area was defined to consist of the District of Columbia and those parts of Maryland and Northern Virginia which are usually considered to be in the Washington metropolitan sphere. The Washington area therefore contained such intelligence billets as those in the office of the Chief of Naval Operations, the Defense Intelligence Agency, and the Naval Intelligence Command with its field activities. These activities were physically located in such diverse locations as the Friendship Annex near Baltimore, Maryland to the north and the Hoffman Building Number I near Alexandria, Virginia, to the south. The billets or cases in the Washington area were assigned the numbers between 200 and 599. Three team members were responsible for gathering data and conducting interviews in this area.

b. Norfolk, Virginia Area

The Norfolk area was defined to contain not only the Norfolk metropolitan sphere but the remainder of the Eastern United States, the Atlantic Ocean, the Mediterranean

Sea, and Europe as well. The billets or cases in this area were assigned the numbers 600 and 799. One team member was responsible for gathering data in this area, and interviewing the incumbents of several billets in the Norfolk organizations.

c. Pearl Harbor, Hawaii Area

The Pearl area was defined to contain all of the Pacific command as well as any continental United States (CONUS) billets west of the Rocky Mountains. These cases were assigned the numbers between 800 and 998. One team member was responsible for gathering data in this area, and conducting interviews in organizations located on Oahu, Hawaii.

3. Data Handling Constraints

Use of a computer for storage and manipulation of data opened up the possibility of collecting and handling a nearly unlimited amount of data. Without restrictions on storage and manipulation, the only real limiting factor was the ability of the researchers to physically cope with the acquisition and the input and output of data. The primary data handling constraints fell into three main areas: restrictions on data capacity, the priorities placed upon the data base, and the capabilities of the data handling system.

a. Data Capacity Restrictions

As far as this particular project was concerned, the computer imposed no limitations as to the quantity of data which could be stored and manipulated. The only

restrictions on the size of the project were limited to the abilities of the research team members to input, update, and output data. Because of early decisions for the necessity to simplify the data gathering instruments, an extraordinary amount of time was required to design each form. A compromise position had to be found between excess complexity and excess brevity. This was necessary in order to ensure the collection of all essential data without the collection of anything superfluous. It was also necessary to arrange each form in such a manner that there would be minimal chance for confusion on the part of the person completing it. The extremes to which it was necessary to go to achieve these ends in form design were time-consuming and often expensive in terms of subsequent coding for machine processing.

These considerations necessarily limited the variety of instruments which could be used and to some degree determined the number of cases which could be covered and the amount of information which could be collected about each case.

(1) <u>Selection of Billets to be Studied</u>. Because of machine and programming capabilities and because of the procedures which were devised for handling the input of case information, more new cases could have been handled with relatively little additional effort on the part of the researchers. The only constraint in this area turned out to be the response provided to the initial set of questionnaires.

The number of people who sent the forms back was the number of cases used.

(2) <u>Selection of Outputs Applicable</u>. Formation of a list of outputs proved to be difficult since every individual tended to think that his own billet was unique and without exact equivalent anywhere else. In order to have meaningful data and in order to be able to manipulate it, the researchers knew that their final list of outputs would have to be relatively short. Otherwise, general conclusions could not be drawn from it. It was here that the Delphi technique proved its worth since it gave the opportunity to go back to respondents and have them fit their earlier responses into the more recent categories. The final list of twenty outputs was on such a level that security problems were eliminated while at the same time enough detail was presented to allow for meaningful comparison and interpretation.

b. Priorities of the Data Base

Since the project was oriented primarily toward the individuals and their billets rather than toward the commands or the organizations themselves, it was felt that a significant amount of detail about each case was essential. This information had to be reduced to a form which could be expressed in terms common among all cases and reducible to punched cards. Once again, the machines which were used did not impose any restrictions. Instead, the restrictions depended on the ingenuity of the people involved in the design

of the questionnaires and coding forms. Emphasis had to be placed on the collection of meaningful data which would remain constant (not need updating) for the duration of the project. The information had to be expressed in terms so general that it would not be significantly altered by reorganizations or by movement from one command to another while at the same time being specific enough to have significance.

4. Area of Convergence

To return for a moment to Zwicky's stages of morphological analysis, the research at this point had progressed from a problem statement (describe the naval intelligence community) to the characterization of the parameters useful in that description (organizational, personal, functional, and educational) and their many component variables. Finally, the imposition of constraints, self-imposed as well as external, had to take place in order to prevent a geometric expansion of increasingly less useful data. As the constraints were applied, the analysis began to take shape, to focus on what could be stated as a "description" of the community. It was within this area of convergence that the problem "solution" began to show itself. The next stage, and the final one in this or any morphological analysis, was the application of value criteria to the data file, for problem solving and other uses. That stage of the research is discussed elsewhere in the paper.

B. MORPHOLOGICAL ANALYSIS AND THE NAVAL INTELLIGENCE COMMUNITY

1. Applicability

The area of convergence discussed above is that description of the community which can be formulated from the data base built during the morphological analysis process. In another section there is a discussion of the applications of value criteria. It suggests manners in which the data base may be used for further analysis and problem solving. The application of morphological analysis to the naval intelligence community has proven to be both a valid and a worthwhile project. Only an analysis methodology dependent on wide ranges of divergent data can successfully cope with such data. The task of describing, codifying, and monitoring a community of highly specialized military personnel scattered over wide ranges of geography is formidable at best and requires a methodology that flourishes on large quantities of divergent data.

2. Problems Encountered and Adjustments to the Basic Methodology

A thorough treatment of this topic can be found in the concluding section.

IV. ESTABLISHING THE COMPUTERIZED DATA BASE

A. BACKGROUND

1. Introduction

This section provides a simplified overview of documentation requirements and computerization procedures. These procedures and methods should not be restricted to this project. They are general enough to be applied, with minor modification, to many other areas of interest. A complete technical description of the programming and related procedures is included in Appendix E. A "Users Manual" is provided as Appendix C.

2. Requirement for Computerization

The magnitude of the administrative and research problems associated with documentation and the requirement to provide a capability for detailed statistical analysis of the resulting data forced the researchers to utilize the IBM 360/67 computer facilities available at the Naval Postgraduate School. In general terms, the naval intelligence community was known to include more than one thousand naval officers. The decision to restrict the research to the upper and middle managerial levels (pay-grades 0-4 through 0-6) reduced the population total to approximately five hundred individuals, spread over the entire globe, from the Far East to the Mediterranean. The size of the administrative task of continued correspondence with each member of the sample population was sufficient reason

for using a computer for the project. The vast quantity of wide-ranging data inherent in morphological analysis made the efficiency of a modern computer mandatory.

3. Precepts Used in the Computerization Process

Two basic precepts governed the computerization process: The human workload must be reduced to the absolute minimum, regardless of the effect on program execution time or other computer resource consumption aspects. Secondly, to the greatest extent possible, the project programming efforts must utilize "canned programs." The use of these pre-programmed packages allowed for a more widely usable and accessible data base and minimized the manpower required to program specialized data handling routines specifically for this project. As discussed below, the intent of the second precept was not fully realized. To fulfill the first precept, tasking the computer with the administrative requirements of the project, it became necessary to develop a detailed and definitive information coding plan which would allow for an unrestricted data base flexibility for future data retrieval.

B. THE OVERALL PLAN

1. Project Phases

The six phases of this project began with the planning phase in May, 1974. During this initial phase the requirements for computerization, as discussed above, were pointed out and the overall research progression was established. The second phase of the research centered around the publication

of Delphi A from which initial biographical information and output data were collected. The problematic statement and the related parameters were formed during these phases of the morphological research and Delphi A collected the first parameter data to be computerized. These data were used in the execution of subsequent phases and were stored for future analysis. Phase three involved the on-site interviews and their related forms and data; phase four involved the second iteration of Delphi A, and phase five produced the educationally-directed Delphi B. Phase six, the final phase of the project, used the data base thus collected to combine the parameter data and provide useful information for problem solving and value criteria application. The computerization plan focused primarily on the construction of the data base and its related files.

2. Data Base Construction Sequence

After each phase of the project had been completed and had produced additional information for insertion into the data base, several distinct steps were executed in sequence in order to insure a valid and retrievable data file.

a. The Validation Step

Each validation was as exhaustive as possible, within reasonable constraints, to insure that what came to be called the "clean" data base did in fact contain only that information desired for the project. Whenever possible the validation consisted of computerized reasonability tests on

the information. For example, a warning message would be generated if a variable such as "age" was noted to be outside a prescribed range of "reasonable" figures for the population. If programming was unable to perform adequate checks, visual verification was used. Where possible, the computer programs themselves corrected erroneous data fields, thus following the original precepts about the role of the machine in this project. If it was not possible for the programs to logically insert corrected information, the warning messages specifying trouble areas were produced. It was presumed that occasional reasonability tests would falsely signal invalid data due to the very tight restrictions imposed. In no case was a computer-generated correction inserted for any data field unless there was no question about its propriety.

b. Printing of the Data Cards

The next step consisted of the printing of the data base. Because of the large number of variables contained in the data base and because of the desire to ease the human burden, each field in the data base was labelled in plain language in the printouts.

c. Sequential Data File Preparation

After data card validation and printing, the newly created data subsets were inserted into the data file. In most instances this step included only the merger, of card(s) or the card image(s) on disc, with preceding data file sets in the proper sequence.

d. Generation of the Statistical Package

The final step in the data base generation was the input of the data base file to the statistical package program. As will be discussed later, the statistical program chosen for this purpose had the ability to retain its own file of input/output data images for use in follow-on analysis. Once this step was carried out the data was ready for transformation into meaningful information.

3. <u>Administrative Support</u>

In addition to the task of data base generation, the overall plan included use of the computer's high speed printer to produce any specialized printed output (such as forms and mailing labels) which reduced the administrative burden. It was felt that local printing facilities would suffice for the greater part of the communication needs between the research group and the population but in those cases where the printed material was to be specifically tailored and unique for each respondent, it was highly desirable to have the computer produce the necessary forms. This capability held significant import in the planning of the variables which were included in the basic data base cards. The plan called for the computer to generate messages requesting completion or clarification of several items of interest in the respondents' files, and each request had to be specifically tailored to the individual case (for examples of individually tailored output forms see Appendix B).

C. COMPUTER LANGUAGE AND PACKAGED PROGRAM COORDINATION

1. Choice of the Primary Level Statistical Package

There were numerous available statistical program packages from which to choose. The NPS Technical Note 0211-22 by G.P. Learmonth provides a cursory review of the more important packages. From that collection, two were considered for this project: BMD or BIOMED, the biomedical Computer Program group, and SPSS, the Statistical Package for the Social Sciences. SPSS was selected for all of the statistical analyses associated with this project. The selection was based on consideration of ease of use, data file retention capability, prior experience, numeric data printing ability, uncomplicated programming requirements, and the wide assortment of statistical routines applicable to the specific needs of the research. Program execution time and ancillary equipment requirements were not factors in the decision. SPSS is well documented in a text written by Nie, Bent, and Hull.[1]

2. Secondary Level Administrative Support Languages

One disadvantage of all the available statistical packages was the inability to process alphanumeric data fields and to produce those specialized outputs required for

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[1]Norman H. Nie, Dale H. Bent, and C. Hadlai Hull, Statistical Package for the Social Sciences, New York: McGraw-Hill Book Company, 1970.

administrative purposes. This basic shortcoming led to the need for a supporting language which was capable of alphanumeric string manipulation. Of those suitable and locally available assembly/compiler level languages, COBOL, ALGOL, FORTRAN, and PL1 were considered. The necessity for string manipulation capability reduced the list to ALGOL and PL1. Prior experience with ALGOL weighted its choice as the secondary support language. Again, program execution time and ancillary equipment requirements did not play important parts in this decision. Stanford University ALGOL W of 16 January 1972 was the version in use locally during this research. Two texts produced by Stanford University Computer Science personnel document their ALGOL W compiler up to an intermediate level.[2]

The decision to use ALGOL W ultimately proved to be disadvantageous because of the lack of diversified input/output control programming. The magnitude of this deficiency was not realized until after significant resources had been committed to the basic data definition module. Time constraints precluded reprogramming in the alternative PL1 language, so the decision was made to attempt, at execution time, an in-core linkage between FORTRAN input/output

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[2]Richard Sites, ALGOL W Reference Manual, STAN-CS-71-230, Stanford University: February 1972, p. 107-110.3. And Henry R. Bauer, Introduction to ALGOL W Programming, Stanford University: July, 1969.

subroutines and ALGOL W main programs. This solution, which had never been documented at the NPS facility, proved to be feasible and operable. Documentation is contained in Appendix E, Fig. E-2. With the exception of this input/output deficiency ALGOL W proved to be a versatile and useful language. Only a minimum amount of FORTRAN programming was necessary in the input/output role.

3. Tertiary Level Support Programs

Statistical analysis was performed using the SPSS package and secondary level administrative support was provided by the ALGOL/FORTRAN linked programs. These programs did not provide ready solutions to the required routine "housekeeping" chores such as placement of card files on disc. They were not readily adaptable to the printing of various data files.

Standard IBM-produced utility programs were utilized for the reading and writing of data files and for the printing of unedited card images. For the printing of tailor-made outputs, it was discovered that a new printing program, which utilized the lower and upper case print capability of the "TN" print train for the Model 1403 printer, was available. This printing program, called Text Processing System (TPS), was tied together with the various secondary level ALGOL/FORTRAN programs to produce pseudo-typewritten hardcopy. The Text Processing System was the communication link between each of the several hundred respondents and the research

group in those instances where personalized output was required. The available documentation for the TPS program is presented in Appendix C.

D. COMPUTER STORAGE REQUIREMENTS AND SECURITY ASPECTS

1. Data File Storage Facilities Used

Initial planning indicated that approximately ten to twelve data cards would be generated per case. Each case would consist of the information pertaining to a single respondent. Had there been 100% participation, it was conceivable that up to 6000 data cards would have been needed to contain the data file. This number did not include the auxiliary files for such things as address labels and scratch files used between different phases in the project. Some files were quite lengthy, ranging upwards from 100,000 card images. The manager of the computer center operations group provided a dedicated Model 2311 disk storage file for the duration of the project. This disk file was numbered SYS003. It was agreed that only those files absolutely necessary for follow-on research would remain on a storage device. These few files were, however, to be transferred to tape storage, thereby releasing the dedicated SYS003 disk. At the time of closing out the working and utility files, those files which could possibly be needed in future regeneration of the data file were returned to punched card form for permanent historical retention.

Only one file remained on tape storage after the project was completed. That file, called the INTELL file, was the composite statistical package data file in SPSS format and included all of the variables accumulated during the span of data collection and analyses. It remained as completely "raw" data without having been recoded or transformed in any manner.

2. <u>Security Of The Data File</u>

Since personal data is contained on the INTELL file, discretion is required in use of the file. Throughout the data collection phases, a concerted effort was made to avoid classification. Even though the INTELL file is not classified, it should be treated as sensitive information. Indiscriminate use of the information contained therein would serve only to betray the enthusiastic support and response provided by the respondents. Non-attribution to source was a keyword throughout the entire project.

E. SUMMARY OF COMPUTER RESOURCES CONSUMED

TABLE 1 presents the accounting information for this project. This data reflects the total amount of CPU time consumed (in seconds), the number of jobs executed, the number of lines printed, and the number of program cards read. The breakdown between the administrative portion (i.e., programming, printing, and file generation) versus the utilization portion (i.e., the statistical analysis) was imprecise. However, the total thesis project statistics are

TABLE 1.

SUMMARY OF COMPUTER RESOURCES CONSUMED

		October 1974	November 1974	December 1974	January 1975	February 1975	TOTAL
PROGRAMMING & FILE WORK	# seconds CPU time	3,104	7,069	6,492	6,925	5,172	28,762
	# jobs executed	334	182	65	158	120	859
	# lines printed	155,721	104,398*	40,076	135,535	173,045	608,775*
	# cards read	132,040	72,876	21,856	51,569	38,736	317,077
STATISTICAL ANALYSIS	# seconds CPU time	1,063	1,785	55	1,506	3,217	7,626
	# jobs executed	130	88	6	134	42	400
	# lines printed	171,573	147,735	10,960	65,576	34,597	430,441
	# cards read	61,939	73,460	3,980	13,663	18,222	171,164
PROJECT TOTAL	# seconds CPU time	4,167	8,854	6,547	8,431	8,389	36,388
	# jobs executed	464	270	71	292	162	1,259
	# lines printed	327,294	252,133*	51,036	201,111	207,642	1,039,216*
	# cards read	193,979	146,336	25,836	65,232	56,858	488,241

* Lines printed for November does not include approximately 88,500 lines printed in preparation of the computer produced DELPHI Questionnaire dated 17 November.

exact and reflect the total of all accountable aspects of the research.

Some interesting facts are obvious from the accounting information for October through December. The October data for administration of the data base indicates a very large number of jobs was executed. This was a result of the large number of small test programs which were written to operationalize the ALGOL/FORTRAN linkage. As the problems were overcome, the number of jobs executed decreased significantly. Further, the number of lines printed and the number of cards read decreased throughout those months. The utilization of the disk storage facilities was primarily responsible for this decrease. As the problems were overcome, the majority of all programs and data were shifted to the data disk SYS003 and recalled from there internally. This type of data and program transfer within the computer and its files was not included in the accounting information. The accounting information for December shows a definite decrease. This resulted from a computer shutdown from 19 December 1974 through 2 January 1975.

F. RECOMMENDATIONS

It should be apparent that better methods to approach the computerization process were available. But with the exception of the input and output control problem associated with the ALGOL compiler, no change in methodology is recommended. Once the operator became accustomed to the awkward nature of

file control, the enhanced alphabetic string capability of ALGOL certainly proved advantageous. If one were to start from the beginning, however, strong consideration should be given to the PL1 language vice ALGOL. PL1 would not be so encumbered.

V. PRESENTATION OF DESCRIPTIVE DATA

A. INTRODUCTION

This section provides an empirical description of the Naval Intelligence Community in terms of the data collected and explains the basic decisions made before the data base was constructed, the possible weaknesses inherent to the data as a result of these decisions, and the effectiveness of the measures taken to reduce the number of mechanical errors. The section then statistically evaluates the methodology used during the research.

B. BASIC DECISIONS AND ASSUMPTIONS

The initial decision to limit the research to the ranks of lieutenant commander through captain was previously discussed under Methodological and Procedural Constraints. This decision resulted in several considerations which should be discussed in some detail.

The first consideration was encountered in the distribution of the questionnaire. Although there was a listing of all intelligence related billets available, there was no way to match a specific billet with a specific person. Even if a billet was known to exist at a specified command there was no simple method for verifying that the incumbent was of the rank stated in the listing or that the billet was even filled.

The first questionnaire was therefore sent to the commanding officer of every organization having an allowance of at least one lieutenant commander (or above) who filled an intelligence related billet. One hundred and nineteen commands fell into this category. Approximately 600 questionnaires, including 100 extras, were distributed to the 119 commands. It was requested that one questionnaire be given to every lieutenant commander, commander, or captain filling an intelligence related billet. Since no accountability was assigned to these forms it was impossible to determine the actual number of persons who actually received them. Since there were no evaluation methods, no inquiry was made concerning non-responses. A total of 325 of the original forms was returned for analysis.

Questionnaires were received from 99 of the original 119 commands and included a wide range of both operational and support units. Since this response represented 83% of the polled commands, a thorough sampling appears to have been achieved. Furthermore, the wide geographical dispersion of the responses enhanced the probability that conditions unique to any one local area would not dominate the sample.

A self-addressed return envelope was provided with each questionnaire to facilitate the ease of handling as well as to maintain the confidentiality of each return. Some commanding officers required that the completed questionnaires be returned to them for mailing; it was unfeasible to determine if this procedure had any significant effect on the responses.

Although retaining the anonymity of the respondents is one of the primary advantages of the Delphi technique,[1] the forwarding of the questionnaires through the commanding officers was not considered a flagrant violation of Delphi procedures. In any case, all subsequent correspondence to individuals was marked for their attention and it was assumed that anonymity of responses was preserved for the remainder of the research.

The next consideration concerned the use of self-evaluations. The potential for difficulties arising from respondent self-evaluation, particularly in the educational Delphi instruments, was recognized at the beginning of the project. There is, however, supportive evidence that subjective self-evaluation produces reliable data.[2] A comparison of the interview and the questionnaire data was performed and the results are presented later.

The final consideration was whether or not to make the educational Delphi B a closed-end device. The purpose of the instrument was to provide a list of the educational areas relevant to naval intelligence and appropriate for graduate level academic pursuit. Time limitations precluded an open-ended approach. Extensive use of interview results was made in compiling the list which was finally used. The possibility

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[1]Joseph Paul Martino, Technological Forecasting for Decision Making, New York: American Elsevier Publishing Company, Inc., 1972, p. 28.

[2]Ibid., pp. 38,39.

of overlooking a valid area was recognized, but the list was believed to be sufficiently inclusive to provide useful data.

C. MECHANICAL ERROR MINIMIZATION

The term "mechanical error" was used in this paper to refer to those errors which were introduced during the process of coding and transposing raw data. Included within this definition are errors caused by personal bias as well as those caused by physical mistakes. The approaches used to minimize error in the coding phase are described next.

Each research team member was assigned a geographic area of responsibility. As the completed forms were received from the respondents, they were distributed to the appropriate team member for a content and format check. Team meetings were held to define and discuss the items which required judgmental decisions on the part of the researchers. Standards, common and agreeable to all team members, were thus established. The forms were then coded for computer entry. By using this method all discrepancies and questions in data value assignment were satisfactorily resolved prior to key-punching for data base entry.

In the actual coding phase, heavy emphasis was placed on accuracy in transposing from unstructured raw data to the properly formatted data which could be manipulated by the computer. After judgmental discrepancies were resolved, the information was coded on the coding forms, the coding sheets

were converted into punched cards, and the punched cards were printed, and careful manual proof-reading and computerized reasonability tests were conducted. Errors were corrected and the data cards were reprinted, reread, and retested. After passing the second test, the data was inserted into the data base. Further details of the entire process are contained in Appendix E. It was assumed that two proof readings by two different people as well as the computerized reasonability tests were sufficient checks to ensure data accuracy. There was no attempt to check for, identify, or examine group bias.

D. PARAMETER DATA DEFICIENCIES AND DESIGN MODIFICATION

1. Organizational Parameter Data

Organizational parameter data provided the foundation upon which detailed descriptions of organizations could be built. The primary requirement for this data was that it allow one to address each command by title, geographical location, billet structure, and any subspecialties.

VAR005 (CONUS or Overseas Code) and VAR006 (Country/State Code) allowed any specific command to be selected according to geographical location. Difficulty arose in the data from the state of Virginia where the large numbers of billets in the Washington and Norfolk areas could not be distinguished. Recoding of the variables using unit identification codes (VAR004) allowed each command to be addressed separately, however.

Billet sequence codes (VAR002) were originally designed to allow an alternative means for addressing each individual case. Many respondents would not or could not provide their billet sequence code, so this variable was unusable in the analysis. Since the case number was equally suitable for the purpose, the billet sequence code was not necessary.

A problem that did affect the study occurred within VAR003 (Billet Title). In many cases billet titles provided insight into the primary function of a billet, but a large number of billets had titles which gave little or no description of the billet. A generic billet title such as "Intelligence Officer" is such an example. As a result, the potential of billet classification by common job titles could not be exploited.

Mechanical and human errors in organizational parameter data were further minimized by submitting the actual coded version of the data to the respondents for verification.

2. Personal Parameter Data

The variables contained in the personal parameter data were designed to describe the individual billet holder as opposed to describing the billet itself. This data was therefore purely biographical and required few subjective judgments on the part of the respondents. This biographical information reflected the respondents' educational background, past experience, and previous training.

A combination of system checks, visual examination by the researchers, and feedback of data to the respondents was considered adequate to insure accuracy.

3. Functional Parameter Data

The third parameter consisted of a listing of naval intelligence outputs. In the interest of saving time, local intelligence specialists were polled for their opinions of community outputs. As a result of this survey, seventeen discrete areas were identified and were used as the basis for the first iteration of Delphi "A". The actual Delphi instrument (Appendix B, Sample A) requested the percentage of time a respondent spent on each of the seventeen outputs. In addition, it requested a listing of any outputs which were not listed on the form. Of the 325 responses to the first questionnaire, 138 (42.5%) of the respondents added at least one output to the original list. A total of 247 additional outputs was received but after collation of these outputs and after elimination of duplication, only three additional outputs were included in the final output listing. All outputs were considered to be contained within the twenty listed ones. To assist the respondents in placing their own additional outputs in the listed twenty, a computer routine was developed to prepare the second iteration of Delphi "A". This routine recommended alternative approaches for the respondent to consider. When the second iteration was returned, only one percent of the respondents indicated any difficulty

in making their revised outputs list conform to the expanded output categories.

A valid criticism of the output variables is that they are not mutually exclusive although they are probably nearly exhaustive. The problem was recognized in the early stages of the project, but no acceptable solution was apparent. Consequently, final analysis of the output data must be evaluated in light of this weakness.

Another part of the first iteration was the attempt to determine whether each output on the list was considered by the respondent to be "valid" as an output for the naval intelligence community. Questionnaires were returned with requests for additional information, no response at all, and responses which indicated a clear misunderstanding of the question. As a consequence, the "validity" data was considered to be unusable and no attempt was made to readdress the question of the validity of the outputs.

Improvement on the respondents' coding reliability was achieved through feedback of information derived from the first iteration of Delphi "A". This information and the respondent's appraisal of his outputs for the second iteration reaffirmed the value of the Delphi technique as a useful tool for the project.

4. Educational Parameter Data

Data for the educational parameter was also collected using a closed-end list of educational areas as previously discussed.

E. UNIVARIATE PARAMETER DATA ANALYSIS

A complete presentation of parameter data can be found in Appendix G. Highlights from each of the parameter areas can be found below.

1. Presentation of Organizational Parameter Data

a. Command Name — Of the 119 commands which received the original questionnaire, 99 (83.2%) had at least one respondent.

b. CONUS/Overseas Code — Of the 325 respondents, 220 (67.7% were located in the continental United States, 24 (7.4%) were located in Europe, 66 (20.3%) were located in the Pacific, 4 (1.2%) were located in the Pacific Afloat, and 11 (3.4%) were located in the Atlantic/Mediterranean Afloat.

c. Country Code — Further geographic breakdown shows that responses came from ten states, the District of Columbia, eight foreign countries, four U. S. protectorates, and forces afloat in the Atlantic, Pacific, and Mediterranean.

d. Billet Subspecialty Code — Of the 319 military respondents, 126 (39.5%) reported that their billet descriptions called for a specific subspecialty. Of these, 91 (72.2%) specified the 7210 subspecialty code.

2. Presentation of Personal Parameter Data

a. Respondent's Rank — Of the 319 military respondents, 40 (12.3%) were captains, 97 (29.8%) were commanders, 175 (53.8%) were lieutenant commanders, and 7 (2.2%) were lieutenants.

b. Respondent's Age – For each of these ranks, the mean age was as follows:

captain	46.6
commander	40.9
lieutenant commander	36.2
lieutenant	29.9
overall mean age	39.0

c. Respondent's Designator – Of the 319 military respondents, 186 (58.3%) were 1630 intelligence specialists, 41 (12.6%) were surface warfare specialists, 28 (8.8%) were air warfare specialists, and 20 (6.3%) were undersea warfare specialists.

d. Respondent's Educational Level – Of the 325 respondents, 21 (6.5%) had less than a bachelors degree, 168 (51.7%) had a bachelors degree, 83 (25.5%) had a masters degree, and 3 (0.9%) had Ph.D.'s.

e. Defense Intelligence/Naval Intelligence School Graduates – Of the 325 respondents, 139 (42.8%) had completed one of the schools, 141 (43.4%) had not, and 45 (13.8%) did not respond.

f. Years Previous Intelligence Experience – The mean number of years was 8.1 with a standard deviation of 6.0 years.

3. Presentation of Functional Parameter Data

Table 2 contains the final listing of intelligence community outputs. Column 1 lists the descriptive outputs. Column 2 presents the percentage of respondents who indicated more than zero percent of their time was spent working on the output. Column 3 presents the mean times spent in producing the output.

TABLE 2

OUTPUT PERCENTAGE VARIABLES — DELPHI A2

Variable Name	Percentage Respondents Reporting Output	Mean Percentage for Billets Reporting Output
Intelligence Office Administration	63.3%	17.2%
Resource/Organization Management	62.0%	15.7%
Budgeting and Fiscal Planning	43.8%	6.5%
Decisions and Recommendations	71.9%	15.0%
Briefs and Debriefs	63.5%	8.3%
Liaison	65.4%	9.7%
Charts and Audio-Visual Aids	37.3%	4.2%
Counterintelligence Studies	10.0%	2.5%
Data Analysis	45.4%	14.3%
Estimates	34.6%	10.3%
Intelligence Annexes to OPORDs	18.5%	5.2%
Intelligence Collection Plans	24.1%	6.4%
Intelligence Collection Tasking	29.6%	6.2%
Intelligence Information Reports	27.8%	6.0%
Interface with ADP-Telecommunications	41.4%	11.1%
Orders-of-Battle	24.7%	4.8%
Physical Security	43.8%	3.5%
Tactical Plots	18.2%	4.6%
Counseling and Training	50.0%	6.4%

Based on 276 cases

4. Presentation of Educational Parameter Data

A detailed presentation of educational parameter data can be found in Tables II through VI in Appendix G. Since this data is cumbersome and since pertinent facts are hard to discern among all the detail, a simplified graphical presentation is approached in the following figures.

For each of the three Delphi B groups ("Used", "Needed", and "Future" educational proficiency levels), each of the twelve major academic categories is depicted on a single bar graph. Each bar graph represents the cumulative relative frequencies of the levels of expertise required in each major subject area. For example, the mathematics bar is made up of the responses submitted for college algebra, beginning calculus, advanced calculus, and probability and statistics. The mathematics bar in Figure 1 therefore shows that more than 50% of the respondents stated that they did not use any of the mathematical techniques listed, nearly 25% stated that they used a basic knowledge, less than 10% used a working knowledge, and less than 1% used an expert knowledge.

A considerable degree of variance may exist between a particular subject's mean level of expertise and that of the group as a whole. The specific 42 academic subject areas which make up the twelve bar graphs are listed in Appendix B, Samples C and D, and in the following chapter.

Such a graphical approach necessarily standardizes the twelve major academic groups since the data are presented

FIGURE 1

PRESENTATION OF EDUCATIONAL DATA ("USED")

Mathematics:

| NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN | BBBBBBBB | WW | E |

Foreign Language:

| NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN | BBBB | W | E |

Area Studies:

| NNNNNNNNNNNNNNNNNNNNNNNNNNNNN | BBBBBBBBBBBBB | WWWW | E |

Operations Analysis:

| NNNNNNNNNNNNNNNNNNNNNNN | BBBBBBBBBBBBBBBBBBBB | WWW | E |

International Relations Theory:

| NNNNNNNNNNNNNNNNNNNN | BBBBBBBBBBBBBBBBBBB | WWWWWW | E |

Naval Science:

| NNNNNNNNNNNNNNNN | BBBBBBBBBBBBBBBBBBBBBBBB | WWWWWW | E |

National Security Affairs:

| NNN | BBBBBBBBBBBBBBBBBBBB | WWWWWWWWWWWWWWWWWW | EEE |

Soviet Forces:

| NNNNNNNNNNN | BBBBBBBBBBBBBBBBBBBB | WWWWWWWWWWWW | EEE |

Blue Forces:

| NNNNN | BBBBBBBBBBBBBBBBBBBBBBBBBBBB | WWWWWWWWWWWWW | E |

Automatic Data Processing:

| NNNNNNNNNNNNNNNNNNNNNN | BBBBBBBBBBBBBBBBBBBBB | WW | E |

Management:

| NNNNNNNNNNNNNNNN | BBBBBBBBBBBBBBBBBB | WWWWWWWWW | E |

Communication Skills:

| N | BBBB | WWWWWWWWWWWWWWWWWWWWWWWWWW | EEEEEEEEEEEEEEEEEEE |

0% 25% 50% 75% 100%

"N" = Not Used; "B" = Basic; "W" = Working; "E" = Expert

FIGURE 2

PRESENTATION OF EDUCATIONAL DATA ("NEED")

Mathematics:	NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN	BBBBBBBBBB	WWWW	E
Foreign Language:	NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN	BBBBBBBBB	WWWWW	E
Area Studies:	NNNNNNNNNNNNNNNNNNNNNNNNNN	BBBBBBBBBBBBB	WWWWWWW	E
Operations Analysis:	NNNNNNNNNNNN	BBBBBBBBBBBBBBBBBBBBBBBBB	WWWWWWWWWW	E
International Relations Theory:	NNNNNNNNNNNNNN	BBBBBBBBBBBBBBBBBBBB	WWWWWWWWWWW	E
Naval Science:	NNNNNNNNNNNN	BBBBBBBBBBBBBBBBBBBBB	WWWWWWWWWWWWW	E
National Security Affairs:	N	BBBBBBBBBBBBBBB	WWWWWWWWWWWWWWWWWWWWW	EEEEEEE
Soviet Forces:	NNNNNNNNNNNNNNNNN	BBBBBBBBBBBBB	WWWWWWWWWWW	EE
Blue Forces:	NNN	BBBBBBBBBBBBBBBBBBBBB	WWWWWWWWWWWWWWWWWW	EE
Automatic Data Processing:	NNNNNNNNNNNNNNNN	BBBBBBBBBBBBBBBBBB	WWWWWWWWWWW	E
Management:	NNNNNNN	BBBBBBBBBBBBBBBBBBBB	WWWWWWWWWWWWWWW	EE
Communication Skills:	BB	WWWWWWWWWWWWWWWWWWWWWWW	EEEEEEEEEEEEEEEEEEEEEEEEE	

0% 25% 50% 75% 100%

"N" = Not Needed; "B" = Basic; "W" = Working; "E" = Expert

FIGURE 3

PRESENTATION OF EDUCATIONAL DATA ("FUTURE")

Mathematics:

NNNNNNNNNNNNNNNNNNNNNNNNNNNN | BBBBBBBBBB | WWWWWW | E

Foreign Language:

NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN | BBBBBBB | WWWWWWWW | E

Area Studies:

NNNNNNNNNNNNNNNNNNNNNN | BBBBBBBBBBBB | WWWWWWWWW | E

Operations Analysis:

NNNNNNNNNN | BBBBBBBBBBBBBBBB | WWWWWWWWWWWWWWWW | E

International Relations Theory:

NNNNNNNNNNNN | BBBBBBBBBBBBBB | WWWWWWWWWWWWWW | EEE

Naval Science:

NNNNNNNNNN | BBBBBBBBBBBBBBB | WWWWWWWWWWWWWWW | EE

National Security Affairs:

N | BBBBBBBBBB | WWWWWWWWWWWWWWWWWWWWW | EEEEEEEEEE

Soviet Forces:

NNNNNNNN | BBBBBBBBBBBBBB | WWWWWWWWWWWWWWW | EEEEE

Blue Forces:

NNN | BBBBBBBBBBBBBBBBB | WWWWWWWWWWWWWWWWWWW | EEEEE

Automatic Data Processing:

NNNNNNNNNN | BBBBBBBBBBBBBBB | WWWWWWWWWWWWWW | EE

Management:

NNNNNNNNNN | BBBBBBBBBBBB | WWWWWWWWWWWWWWWW | EEEEEEE

Communication Skills:

B | WWWWWWWWWWWWWWWWWWW | EEEEEEEEEEEEEEEEEEEEEEEEEEE

0% 25% 50% 75% 100%

"N" = Not Needed; "B" = Basic; "W" = Working; "E" = Expert

in percentiles. Consequently, comparisons cannot be made between individual bar graphs. One cannot conclude therefore, that the foreign language requirements and the national security affairs sequence requirements are equally weighted. Later and more sophisticated analysis and scaling techniques will provide this ability to rank and to weight individual educational areas and to make normative conclusions about the data.

F. METHODOLOGICAL EVALUATION

1. Background

Before proceeding to other analyses it is necessary to explore (from a statistical viewpoint) the aggregate effectiveness and characteristics of the methodology. Sackman[3] presents a hyper-critical analysis of the Delphi technique. After reviewing approximately 150 Delphi studies, he states:

> If Delphi is to be treated seriously as a professional technique, it must be judged by basic, minimum standards applicable to all empirical social science.[4]

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[3] U.S.A.F. Project Rand, Report R-1283-PR, Delphi Assessment: Expert Opinion, Forecasting, and Group Process, by H. Sackman, Santa Monica, California: The RAND Corporation, April 1974.

[4] Ibid., p. 11.

Sackman comments that he:

> . . . has never seen the full three-dimensional matrix of items versus panelists versus rounds analyzed by a common statistical vehicle, such as analysis of variance, to test for main and interaction effects. Nor are items compared for homogeneity of variance, linearity, and type of empirical frequency distributions for applying such tests. With small samples, interquartile Delphi graphs are no substitute for rigorous statistical testing of individual items and item subsets. This is not a pedantic frill — differential statistical reliability requires differential interpretation of findings.[5]

The following discussion empirically analyzes the more important facets of the resulting data base by using conventional hypothesis testing approaches. Six hypotheses were used in this process:

Hypothesis A: There was a decrease in the variance of data acquired in the intelligence outputs Delphi A2 relative to the data obtained from the original intelligence outputs (Delphi A [first iteration]).

Hypothesis B: There was a decrease in the variance of data acquired in the educational "<u>levels used</u>" (Delphi B) relative to the interview data.

Hypothesis C: There was a decrease in the variance of data acquired in the educational "<u>levels needed</u>" (Delphi B) relative to the interview data.

Hypothesis D: There is no difference in the intelligence outputs as reported in the first iteration data versus those reported in Delphi A2.

Hypothesis E: There is no difference in the educational "<u>levels used</u>" as reported in the interview data versus those reported in Delphi B.

Hypothesis F: There is no difference in the educational "<u>levels needed</u>" as reported in the interview data versus those reported in Delphi B.

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[5]Ibid., p. 14.

Each hypothesis was statistically tested and either accepted or rejected. "The probability of committing a type I error, which is denoted by α, is called the significance level of the test."[6] A type I error results when an alternate hypothesis is accepted when the null hypothesis is, in fact, true. The $\alpha = 0.05$ significance level was chosen for the cutoff point for hypothesis acceptance.

2. Comments on the Statistical Analysis

a. The Statistical Problem

Finding an appropriate statistical analysis computer package became an almost insurmountable task. The SPSS programs were suitable for the analysis which was performed early on, but when the time came to examine Hypotheses A, B, and C, it became obvious that the only applicable test was a multivariate analysis of variance test (MANOVA). No such preprogrammed capability existed at the Naval Postgraduate School computer facility, SPSS and BIOMED notwithstanding. A library search produced numerous texts at a theoretical level, but only one[7] was found which developed a computerized solution. This text contained a "cookbook" approach with program listings for several of the higher level statistical techniques.

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[6] Paul G. Hoel and Raymond J. Jessen, Basic Statistics for Business and Economics, New York: John Wiley and Sons, Inc., 1971, p. 197.

[7] William W. Cooley and Paul R. Lohnes, Multivariate Data Analysis, New York: John Wiley and Sons, Inc., 1971, Chapter 8.

The programs were written in FORTRAN. The Cooley-Lohnes MANOVA program was modified to make it operational on the Naval Postgraduate School IBM 360/67 computer. Modifications included using International Mathematical Subroutine Library (IMSL) double-precision matrix inversion and determinant calculation subroutines, cosmetic input/output changes, and the use of IMSL subroutines for the calculation of F-distribution values. No attempt was made to integrate the double-precision array declarations; rather, the single-precision data arrays in the Cooley-Lohnes program were transferred to "REAL*8" dimensioned arrays and it was these arrays that were passed to the IMSL subroutines. These double-precision calculations were necessitated by some matrices being close to singularity and their determinants being very small numbers (on the order of 10^{-23}). Upon exiting from IMSL subroutines, the results were usually truncated to single-precision. A copy of one such calculation is contained in Appendix F Sample R.

b. Variance Analysis

Variable-by-variable variance analysis provided an indicator of dispersion characteristics. Individual F-ratio tests would have been the only means of addressing variance analysis had the MANOVA program not been made operational in time to be of use. The F-test is a comparison of two variance estimates resulting in a ratio between the two variances. If the sample variances are equal, then the

F-ratio equals 1.0, and it is this ratio which provides for a measure of the probability that the two samples were drawn from the same population. On the multivariate level, the MANOVA technique considers all variables at one time and provides one F-ratio for the composite of the sample groups. The results of these variance analyses is given in sections on Hypotheses A, B, and C below.

c. Population Means Analysis

Similar to the variance analysis approach, variable-by-variable Student's t-tests were made. The Student's t-test allows one to determine the probability that both sample means could have been drawn from the same population. Although not capable of testing hypotheses directly, the tests do provide a preliminary review of pairwise variable relationships. Centroidal equality [the multivariate extension of equal sample means] was then approached in Hypotheses D, E, and F.

While waiting for the MANOVA program to be operationalized, an interim approach to hypothesis testing was taken. This approach used the "DISCRIMINANT" routine in the SPSS package. The basic principle of this approach was to take two groups of data [e.g., the interview data versus Delphi B data], develop a regression equation for each group, and utilize the resulting F-statistics to determine if a significant difference in centroids existed. The F-statistics resulting from these tests are a multivariate extension of Fisher's t-statistic used in testing hypotheses about

population means. The original multivariate relationship was developed for two groups by Hotelling in 1931 and is commonly known as Hotelling's T^2-Statistic. After being operationalized, the same MANOVA program used in testing variance related hypotheses provided meaningful F-statistics for testing centroidal equality hypotheses. The resulting single F-statistic is similar to the multivariate extension of Fisher's t-statistic used in the DISCRIMINANT analysis. The results of all of the means and centroids equality analyses is given in the sections on Hypotheses D, E, and F below.

d. The Power of the MANOVA Tests

On the theoretical side, Cooley and Lohnes state:

> . . . these multivariate tests [MANOVA] are quite powerful, so research on large samples is quite likely to lead to a rejection of H_1 [the hypothesis that the populations have a common dispersion] with some consequent embarrassment to a MANOVA theory for the data. However, . . . a finding about group dispersions may have a great deal of value in its own right.[8]

Since the analysis performed in this project was made on large samples, it was no surprise that the null hypothesis for Hypotheses A, B, and C were rejected in all three cases with F-ratios of 3.40, 1.83, and 2.13, respectively. Each hypothesis is discussed separately below.

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[8]Ibid., p. 228.

3. Hypothesis A Test Results

The first hypothesis to be tested concerns instrument dispersions relating to intelligence outputs data:

Hypothesis A: There was a decrease in the variance of data acquired in the intelligence outputs Delphi A2 relative to the data obtained from the original intelligence outputs (Delphi A [first iteration]).

Looking first at a variable-by-variable F-test, Table 3 contains the intelligence outputs and their individual variances. A two-tailed test was chosen and rejection zone established at the less than/equal to 0.975 and the greater than/equal to 0.025 levels. This is the usual 0.05 significance level with half [0.025] the area being split into each tail of the distribution. For the output data, the F-values corresponding to the 0.975/0.025 significance levels and for $\nu_1 = 301$ degrees of freedom in the questionnaire data and $\nu_2 = 274$ degrees of freedom in Delphi A data were 0.79 and 1.26, respectively. Of the 16 intelligence output variables, seven [44%] indicated reduced variance, seven [44%] indicated no significant change, and only two variables [12%] showed increased variance.

The MANOVA calculations resulted in an F-ratio of 3.40 with $\nu_1 = 136$ [numerator degrees of freedom] and $\nu_2 = 1{,}036{,}604$ [denominator degrees of freedom]. No precise tabular F-values were available or could be calculated locally. The approximate F-value at the 0.05 significance

TABLE 3

F-tests of Intelligence Output Variable Dispersion

Variable Numbers: Questionnaire	Variable Numbers: Delphi	Variable Name	Variances: Questionnaire	Variances: Delphi	F-ratio
VAR025	VAR187	Intelligence Office Administration	540.1	256.6	2.03*
VAR027	VAR191	Briefs and Debriefs	74.2	63.6	1.17
VAR029	VAR188	Budgets and Budgeting	57.4	49.2	1.17
VAR031	VAR193	Charts and Audio-Visual Aids	47.2	37.4	1.26
VAR033	VAR194	Counterintelligence Studies	14.1	2.4	5.88*
VAR035	VAR195	Data Analysis	217.3	169.6	1.28*
VAR037	VAR190	Decisions and Recommendations	254.1	150.7	1.69*
VAR039	VAR196	Estimates	84.5	110.6	0.76*
VAR041	VAR197	Intelligence Annexes to OPORDs	35.9	9.2	3.90*
VAR043	VAR198	Intelligence Collection Plans	21.5	25.1	0.86
VAR045	VAR199	Intelligence Collection Tasking	43.3	40.5	1.07
VAR047	VAR200	Intelligence Information Reports	47.5	24.4	1.95*
VAR051	VAR201	Interface with ADP/Telecommunications	226.3	162.0	1.40*
VAR053	VAR202	Orders-of-Battle	9.9	11.2	0.88
VAR055	VAR203	Physical Security	11.3	16.6	0.68*
VAR057	VAR204	Tactical Plots	8.6	8.8	0.98

$\nu_1 = 301$, Delphi A degrees of freedom

$\nu_2 = 274$, Delphi A2 degrees of freedom

* indicates statistically significant difference in variances [based on 0.975 and 0.025 significance levels]

level is 1.22. This meant that there is a statistically significant difference in group dispersions.

Given that there is a difference in group dispersions [the MANOVA test], one must decide if the difference is due to an increase or to a decrease in variances. Because only two variables had an increased variance in the side-by-side variance comparisons as opposed to seven with decreased variance and seven with no change in variance, Hypothesis A was accepted. There was a decrease in the variance of data acquired in the intelligence outputs Delphi A2 relative to the data contained in the original intelligence outputs Delphi A [first iteration].

4. Hypothesis B Test Results

The second hypothesis was approached in a manner similar to Hypothesis A. This next hypothesis stated:

Hypothesis B: There was a decrease in the variance of data acquired in the educational "levels used" Delphi B relative to the interview data.

Variable-by-variable F-tests results are exhibited in Table 4. The two-tailed F-ratio 0.975/0.025 significance levels rejection zone was established as less than/equal to 0.73 and greater than/equal to 1.37, respectively; $\nu_1 = 102$ [interview data degrees of freedom] and $\nu_2 = 258$ [Delphi B data degrees of freedom]. Table 4 data shows nine variables [21%] had decreased variance, 32 variables [76%] showed no change in variance, and only one variable [2%] indicated an increase in variance.

TABLE 4

F-tests of "USED" Educational Proficiency Level Dispersion

Variable Numbers: Interview	Delphi B	Variable Name	Variances: Interview	Delphi B	F-ratio
VAR087	VAR213	College Algebra	0.554	0.586	0.95
VAR088	VAR216	Beginning Calculus	0.536	0.418	1.28
VAR090	VAR219	Advanced Calculus	0.426	0.280	1.52*
VAR089	VAR222	Probability and Statistics	0.605	0.641	0.94
VAR091	VAR225	Foreign Language	0.177	0.298	0.59*
VAR092	VAR228	USSR Area Studies	0.927	0.791	1.17
VAR093	VAR231	China Area Studies	0.822	0.642	1.28
VAR094	VAR234	Middle East Area Studies	0.551	0.602	0.92
VAR095	VAR237	European Area Studies	0.487	0.653	0.75
VAR096	VAR240	Latin American Area Studies	0.383	0.376	1.02
VAR097	VAR243	African Area Studies	0.279	0.385	0.72
VAR098	VAR246	Operations Analysis	0.458	0.509	0.90
VAR099	VAR249	International Relations Theory	0.690	0.697	0.99
VAR100	VAR252	Underwater Acoustics	0.671	0.560	1.20
VAR101	VAR255	Sonar Systems	0.658	0.528	1.25
VAR102	VAR258	Communication Systems	0.725	0.557	1.30
VAR103	VAR261	Radar Systems	0.746	0.509	1.47*
VAR104	VAR264	Optics	0.507	0.473	1.07
VAR105	VAR267	Lasers	0.485	0.445	1.09
VAR106	VAR270	Collection Systems	0.813	0.631	1.29
VAR108	VAR278	Threat and Net Assessment	0.799	0.766	1.04
VAR109	VAR281	National Security & Intelligence Organization	0.623	0.657	0.95

TABLE 4 (Continued)

F-tests of "USED" Educational Proficiency Level Dispersion

Variable Numbers: Interview	Delphi B	Variable Name	Variances: Interview	Delphi B	F-ratio
VAR110	VAR284	Soviet Navy	1.075	0.840	1.28
VAR111	VAR287	Soviet Air Force	0.940	0.713	1.32
VAR112	VAR290	Soviet Ground Forces	0.693	0.535	1.30
VAR114	VAR293	Soviet Strategic Rocket Troops	0.780	0.647	1.21
VAR115	VAR296	Soviet Merchant/Fish/Oceanographic	0.921	0.728	1.27
VAR117	VAR299	U.S. Naval Forces	0.858	0.611	1.40*
VAR118	VAR302	U.S. Non-Naval Forces	0.664	0.452	1.47*
VAR119	VAR305	Allied Capability	0.699	0.466	1.50*
VAR120	VAR308	ADP System Design/Management	0.800	0.678	1.18
VAR121	VAR311	ADP Hardware Operations	0.871	0.599	1.45*
VAR122	VAR314	ADP Software and Programming	0.664	0.533	1.25
VAR123	VAR317	ADP Basic Interface Operations	0.565	0.595	0.95
VAR129	VAR320	Management by Objectives	0.754	0.756	1.00
VAR130	VAR323	Personnel Management	0.865	0.767	1.13
VAR131	VAR326	Financial Management	0.927	0.749	1.24
VAR107	VAR329	National/Naval Budgetary Process	0.763	0.760	1.00
VAR132	VAR332	Labor Relations	0.729	0.551	1.32
VAR124	VAR335	Briefing	0.806	0.582	1.38*
VAR125	VAR338	Writing	0.853	0.419	2.04*
VAR126	VAR341	Organization of Thought	1.151	0.410	2.81*

ν_1 = 102, interview data degrees of freedom
ν_2 = 258, Delphi B data degrees of freedom
* indicates statistically significant difference in variances [based on 0.975 and 0.025 significance levels]

MANOVA calculations resulted in an F-ratio of 1.83 with ν_1 = 903 [interview data degrees of freedom] and ν_2 = 124,342 [Delphi B data degrees of freedom]. The approximate F-ratio tabular value [no precise values were available or could be calculated locally] is 1.05 at the 0.05 significance level. This test indicated a statistically significant dispersion difference existed.

Since there was a dispersion difference and the side-by-side variance analysis data from Table 4 indicated only one variable had increased its variance as opposed to seven variables decreasing and seven variables with no change in variance, one must conclude that Hypothesis B is true. There was a decrease in the variance of data acquired in the educational "levels used" [Delphi B] relative to the interview data.

5. Hypothesis C Test Results

The last hypothesis concerning group dispersions was:

Hypothesis C: There was a decrease in the variance of data acquired in the educational "levels needed" [Delphi B] relative to the interview data.

Side-by-side F-tests were conducted. The two-tailed F-ratio 0.975/0.025 rejection zone was the same as for Hypothesis B, i.e., less than/equal to 0.73 and greater than/equal to 1.37. The degrees of freedom were the same: ν_1 = 102 and ν_2 = 258. The results of these tests are shown in Table 5. Thirty-two variables [76%] showed decreased variance, ten variables [24%] showed no change in variance, and no variables indicated an increased variance.

TABLE 5

F-tests of "NEEDED" Educational Proficiency Level Dispersion

Variable Numbers: Interview	Delphi B	Variable Name	Variances: Interview	Delphi B	F-ratio
VAR137	VAR214	College Algebra	0.646	0.601	1.07
VAR138	VAR217	Beginning Calculus	0.645	0.458	1.41*
VAR140	VAR220	Advanced Calculus	0.455	0.320	1.42*
VAR139	VAR223	Probability and Statistics	0.910	0.690	1.32
VAR141	VAR226	Foreign Language	0.796	0.616	1.29
VAR142	VAR229	USSR Area Studies	1.326	0.830	1.60*
VAR143	VAR232	China Area Studies	1.316	0.773	1.70*
VAR144	VAR235	Middle East Area Studies	1.038	0.732	1.42*
VAR145	VAR238	European Area Studies	0.906	0.787	1.15
VAR146	VAR241	Latin American Area Studies	0.564	0.483	1.17
VAR147	VAR244	African Area Studies	0.504	0.493	1.02
VAR148	VAR247	Operations Analysis	0.759	0.620	1.22
VAR149	VAR250	International Relations Theory	1.270	0.753	1.69*
VAR150	VAR253	Underwater Acoustics	0.988	0.717	1.38*
VAR151	VAR256	Sonar Systems	0.951	0.662	1.44*
VAR152	VAR259	Communication Systems	1.159	0.642	1.81*
VAR153	VAR262	Radar Systems	0.986	0.629	1.57*
VAR154	VAR265	Optics	0.838	0.609	1.38*
VAR155	VAR268	Lasers	0.788	0.592	1.33
VAR156	VAR271	Collection Systems	1.056	0.717	1.47*
VAR158	VAR279	Threat and Net Assessment	1.433	0.784	1.83*
VAR159	VAR282	National Security & Intelligence Organization	0.791	0.655	1.21

TABLE 5 (Continued)

F-tests of "NEEDED" Educational Proficiency Level Dispersion

Variable Numbers: Interview	Variable Numbers: Delphi B	Variable Name	Variances: Interview	Variances: Delphi B	F-ratio
VAR160	VAR285	Soviet Navy	1.517	0.921	1.65*
VAR161	VAR288	Soviet Air Force	1.522	0.797	1.91*
VAR162	VAR291	Soviet Ground Forces	1.381	0.595	2.32*
VAR164	VAR294	Soviet Strategic Rocket Troops	1.376	0.683	2.01*
VAR165	VAR297	Soviet Merchant/Fish/Oceanographic	1.465	0.724	2.02*
VAR167	VAR300	U.S. Naval Forces	1.152	0.682	1.69*
VAR168	VAR303	U.S. Non-Naval Forces	1.111	0.592	1.88*
VAR169	VAR306	Allied Capability	1.263	0.589	2.14*
VAR170	VAR309	ADP System Design/Management	1.232	0.872	1.41*
VAR171	VAR312	ADP Hardware Operations	1.332	0.777	1.71*
VAR172	VAR315	ADP Software and Programming	0.934	0.671	1.39*
VAR173	VAR318	ADP Basic Interface Operations	0.956	0.705	1.36
VAR179	VAR321	Management by Objectives	1.256	0.800	1.57*
VAR180	VAR324	Personnel Management	1.484	0.799	1.86*
VAR181	VAR327	Financial Management	1.409	0.852	1.65*
VAR157	VAR330	National/Naval Budgetary Process	1.247	0.897	1.39*
VAR182	VAR333	Labor Relations	1.300	0.726	1.79*
VAR174	VAR336	Briefing	1.088	0.726	2.05*
VAR175	VAR339	Writing	1.131	0.366	3.09*
VAR176	VAR342	Organization of Thought	1.688	0.343	4.92*

ν_1 = 102, interview data degrees of freedom
ν_2 = 258, Delphi B data degrees of freedom

* indicates statistically significant difference in variances [based on 0.975 and 0.025 significance levels]

MANOVA test calculations resulted in an F-ratio of 2.13 with ν_1 = 903 [interview data degrees of freedom] and ν_2 = 124,509 [Delphi B data degrees of freedom]. Again with no precise tabular F-value available, the approximate F-value is 1.05 at the 0.05 significance level. This test means there is a statistically significant difference in group dispersions.

Again given that there is a difference in group dispersions [from the MANOVA test], one must decide if the difference is due to an increase or a decrease in variances. Because no variables indicated an increased variance and the remainder either decreased or had no variance change in the side-by-side F-ratio tests, Hypothesis C must be accepted. There was a decrease in the variance of data acquired in the educational "levels needed" Delphi B relative to the interview data.

6. Hypothesis D Test Results

The first hypothesis which tested centroidal equality, i.e., the equality of means in a multivariate sense, was:

Hypothesis D: There is no difference in the intelligence outputs as reported in the first iteration data versus those reported in Delphi A2.

The results of the pairwise Student's t-tests are listed in Table 6. Of the 16 intelligence outputs listed, three [18.7%] have statistically different means at the 0.05 level.

TABLE 6

Student's t-tests of Intelligence Output Variable Means

Variable Numbers: Questionnaire	-Delphi	Variable Name	t-test Probability
VAR025	VAR187	Intelligence Office Administration	0.00*
VAR027	VAR191	Briefs and Debriefs	0.93
VAR029	VAR188	Budgets and Budgeting	0.36
VAR031	VAR193	Charts and Audio-Visual Aids	0.09
VAR033	VAR194	Counterintelligence Studies	0.34
VAR035	VAR195	Data Analysis	0.54
VAR037	VAR190	Decisions and Recommendations	0.74
VAR039	VAR196	Estimates	0.44
VAR041	VAR197	Intelligence Annexes to OPORDs	0.73
VAR043	VAR198	Intelligence Collection Plans	0.85
VAR045	VAR199	Intelligence Collection Tasking	0.03*
VAR047	VAR200	Intelligence Information Reports	0.60
VAR051	VAR201	Interface with ADP/Telecommunications	0.06
VAR053	VAR202	Orders-of-Battle	0.01*
VAR055	VAR203	Physical Security	0.09
VAR057	VAR204	Tactical Plots	0.37

*indicates Student's t-probabilities less than cutoff level [$\alpha = 0.05$].

Factor DISCRIMINANT analysis computed an F-ratio of 1.65 with $\nu_1 = 14$ [numerator degrees of freedom] and $\nu_2 = 568$ [denominator degrees of freedom]. The table value for the F-statistic at the 0.05 significance level is 1.71, thereby indicating no statistically significant difference in group centroids. The MANOVA test produced an F-value of 1.48 with $\nu_1 = 16$ and $\nu_2 = 568$. This test also indicated there was no statistically significant difference in group centroids since the F-table value is 1.66.

Hence, based on both DISCRIMINANT and MANOVA centroidal tests, Hypothesis D was accepted. There is no difference in intelligence outputs as reported in the first iteration data versus those outputs reported in Delphi A2.

7. Hypothesis E Test Results

Following a scheme similar to the test for Hypothesis D, the used educational proficiency levels hypothesis was tested:

Hypothesis E: There is no difference in the educational "levels used" as reported in the interview data versus those reported in Delphi B.

The results of the pairwise Student's t-tests are presented in Table 7. Twenty-three of the 42 used educational proficiency levels [54.7%] have statistically significant differences in their means at the 0.05 level.

TABLE 7

Student's t-tests of "USED" Educational Level Means

Variable Numbers: Interview	Delphi	Variable Name	t-test Probability
VAR087	VAR213	College Algebra	0.59
VAR088	VAR216	Beginning Calculus	0.15
VAR090	VAR219	Advanced Calculus	0.30
VAR089	VAR222	Probability and Statistics	0.00*
VAR091	VAR225	Foreign Language	0.09
VAR092	VAR228	USSR Area Studies	0.24
VAR093	VAR231	China Area Studies	0.02*
VAR094	VAR234	Middle East Area Studies	0.91
VAR095	VAR237	European Area Studies	0.14
VAR096	VAR240	Latin American Area Studies	0.89
VAR097	VAR243	African Area Studies	0.06
VAR098	VAR246	Operations Analysis	0.27
VAR099	VAR249	International Relations Theory	0.04*
VAR100	VAR252	Underwater Acoustics	0.01*
VAR101	VAR255	Sonar Systems	0.00*
VAR102	VAR258	Communication Systems	0.05*
VAR103	VAR261	Radar Systems	0.02*
VAR104	VAR264	Optics	0.00*
VAR105	VAR267	Lasers	0.00*
VAR106	VAR270	Collection Systems	0.00*
VAR108	VAR278	Threat and Net Assessment	0.00*
VAR109	VAR281	National Security & Intelligence Organization	1.00

TABLE 7 (Continued)

Student's t-tests of "USED" Educational Level Means

Variable Numbers: Interview	Delphi	Variable Name	t-test Probability
VAR110	VAR284	Soviet Navy	0.00*
VAR111	VAR287	Soviet Air Force	0.01*
VAR112	VAR290	Soviet Ground Forces	0.15
VAR114	VAR293	Soviet Strategic Rocket Troops	0.16
VAR115	VAR296	Soviet Merchant/Fish/Oceanographic	0.00*
VAR117	VAR299	U.S. Naval Forces	0.00*
VAR118	VAR302	U.S. Non-Naval Forces	0.00*
VAR119	VAR305	Allied Capability	0.00*
VAR120	VAR308	ADP System Design/Management	0.57
VAR121	VAR311	ADP Hardware Operations	0.03*
VAR122	VAR314	ADP Software and Programming	0.19
VAR123	VAR317	ADP Basic Interface Operations	0.07
VAR129	VAR320	Management by Objectives	0.00*
VAR130	VAR323	Personnel Management	0.00*
VAR131	VAR326	Financial Management	0.50
VAR107	VAR329	National/Naval Budgetary Process	0.11
VAR132	VAR332	Labor Relations	0.80
VAR124	VAR335	Briefing	0.00*
VAR125	VAR338	Writing	0.00*
VAR126	VAR341	Organization of Thought	0.00*

* indicates Student's t-probabilities less than cutoff level [$\alpha = 0.05$].

The DISCRIMINANT analysis routine computed an F-value of 8.44 with $\nu_1 = 38$ and $\nu_2 = 322$. This indicates a significant difference in group centroids since the tabular F-value is 1.44. The MANOVA test calculated an F-statistic of 10.62 with $\nu_1 = 42$ and $\nu_2 = 320$. This test also indicated a statistically significant difference in group centroids because the F-statistic table value is 1.42.

Therefore, with both DISCRIMINANT and MANOVA tests agreeing, Hypothesis E is rejected. There is a significant difference in the educational levels <u>used</u> as reported in the interview data versus those reported in Delphi B.

8. <u>Hypothesis F Test Results</u>

The last hypothesis to be tested concerns <u>needed</u> educational proficiency levels:

Hypothesis F: There is no difference in the educational "<u>levels needed</u>" as reported in the interview data versus those reported in Delphi B.

Pairwise variable Student's t-tests results are contained in Table 8. Fourteen of the 42 educational levels <u>needed</u> [33.3%] had statistically significant difference in their means.

DISCRIMINANT analysis calculated an F-statistic of 9.76 with $\nu_1 = 38$ and $\nu_2 = 321$. This indicates that a significant difference in group centroids exists since the tabular F-value is 1.44. MANOVA analysis also concluded that there is a significant difference in group centroids with a

TABLE 8

Student's t-tests of "NEEDED" Educational Level Means

Variable Numbers: Interview	Delphi	Variable Name	t-test Probability
VAR137	VAR214	College Algebra	0.40
VAR138	VAR217	Beginning Calculus	0.19
VAR140	VAR220	Advanced Calculus	0.40
VAR139	VAR223	Probability and Statistics	0.36
VAR141	VAR226	Foreign Language	0.68
VAR142	VAR229	USSR Area Studies	0.01*
VAR143	VAR232	China Area Studies	0.00*
VAR144	VAR235	Middle East Area Studies	0.07
VAR145	VAR238	European Area Studies	0.62
VAR146	VAR241	Latin American Area Studies	0.29
VAR147	VAR244	African Area Studies	0.90
VAR148	VAR247	Operations Analysis	0.20
VAR149	VAR250	International Relations Theory	0.62
VAR150	VAR253	Underwater Acoustics	0.18
VAR151	VAR256	Sonar Systems	0.07
VAR152	VAR259	Communication Systems	0.62
VAR153	VAR262	Radar Systems	0.09
VAR154	VAR265	Optics	0.03*
VAR155	VAR268	Lasers	0.01*
VAR156	VAR271	Collection Systems	0.10
VAR158	VAR279	Threat and Net Assessment	0.01*
VAR159	VAR282	National Security & Intelligence Organization	0.03*

TABLE 8 (Continued)

Student's t-tests of "NEEDED" Educational Level Means

Variable Numbers: Interview	Delphi	Variable Name	t-test Probability
VAR160	VAR285	Soviet Navy	0.03*
VAR161	VAR288	Soviet Air Force	0.34
VAR162	VAR291	Soviet Ground Forces	0.41
VAR164	VAR294	Soviet Strategic Rocket Troops	0.59
VAR165	VAR297	Soviet Merchant/Fish/Oceanographic	0.20
VAR167	VAR300	U.S. Naval Forces	0.00*
VAR168	VAR303	U.S. Non-Naval Forces	0.03*
VAR169	VAR306	Allied Capability	0.22
VAR170	VAR309	ADP System Design/Management	0.10
VAR171	VAR312	ADP Hardware Operations	0.02*
VAR172	VAR315	ADP Software and Programming	0.08
VAR173	VAR318	ADP Basic Interface Operations	0.00*
VAR179	VAR321	Management by Objectives	0.01*
VAR180	VAR324	Personnel Management	0.18
VAR181	VAR327	Financial Management	0.47
VAR157	VAR330	National/Naval Budgetary Process	0.59
VAR182	VAR333	Labor Relations	0.06
VAR174	VAR336	Briefing	0.07
VAR175	VAR339	Writing	0.00*
VAR176	VAR342	Organization of Thought	0.00*

* indicates Student's t-probabilities less than cutoff level [$\alpha = 0.05$]

computed F-ratio of 10.17 and $\nu_1 = 42$ and $\nu_2 = 319$. The F-statistic table value is 1.42 at the 0.05 significance level.

Accordingly, with both discriminant and MANOVA analyses in agreement, Hypothesis F was rejected. There is a difference in the educational levels needed as reported in the interview data versus those reported in Delphi B.

9. Hypothesis Evaluation Summary

Two major conclusions result from the hypothesis tests:
(1) In all three cases [Delphi A2 versus first iteration, interview versus Delphi B (educational level used), and interview versus Delphi B (educational level needed)], the variance decreased. With additional Delphic iterations one should be able to pursue a possible cause/effect relationship between feedback/variance.
(2) Data from the first output iteration was not significantly different from Delphi A2 data [it came from the same source], but interview data was not so similar. [It came from different sources.] This can imply several things, but later it will be shown that the interview data just rated the educational proficiency levels one "notch" lower on the whole, but with close to the same ranking priorities as did the (educational) Delphi B.

VI. ANALYSIS OF DATA

This section briefly reviews the stages of morphological analysis as they apply to the research and presents a discussion of value criteria application. The analysis of data collected within this research was time-limited, therefore this section has been designed not only to present the results of that analysis, but also to point out to the reader that there is a great deal of analysis yet to be done.

Upon completion of the preliminary stages of data collection, computerization, and unanalyzed data presentation, it became apparent that the methodology developed thus far could easily apply to the study of other "communities" of specialized individuals. In addition to the broad potential usefulness of the methodology and research instrumentation, it was felt that the analyzed results of such a study could also be of interest to a wide and diverse audience. This multi-level applicability is an inherent strength of the morphological approach to "community" studies.

A. MORPHOLOGICAL ANALYSIS

It is necessary at this point to briefly review the stages of morphological analysis (as conceived by Zwicky and modified in this research) in order to better visualize the multi-level applicability of both the methodology and the results. Mophological analysis begins with a problematic statement.

1. Problematic Statement

The problem statement for this research was: "Describe the naval intelligence community." The statement was purposefully made in general form, in keeping with the morphological concepts presented by Zwicky.[1] The results of this research do indeed "describe" the community and do so in terms of the parameters set down at the project's conception.

2. Parameters

In this project, data was collected within functional, organizational, educational, and personal parameters. The parameters to be selected for similar studies of other specialist communities could be defined in accordance with the appropriate project goals and objectives. In a broadly descriptive analysis such as this one, the parameters are designed with several variables common to two or more parameter areas, allowing an overlapping of data, and facilitating data collection.

3. Divergence

The usable information collected with this parameter system quickly becomes diverse, as the morphological process mushrooms into vast amounts of seemingly unrelated data. This period of divergence is then brought under control by the establishment of various research constraints.

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[1] Zwicky and Wilson, New Methods of Thought and Procedure, p. 100.

4. Constraints

A constraint is applied during morphological research when the data gathering process threatens to obscure, in a plethora of unrelated information, the project's ultimate solutions. The constraint is specifically designed to control, rather than limit, the amounts of data to be collected within a given parameter. There are, of course, various constraints over which the researchers have little control, and are set on the project by environmental effects. An example within this research was the constraint imposed by classification and security regulations. In any case, care must be taken to insure that the constraint does not in any way bias the data or the resulting analysis of that data. If a constraint will unavoidably bias the data (as in the case of this project's "rank" constraint) the bias must be taken into account during the analysis process. Properly applied constraints tend to converge the data collection and focus it toward providing information useful to the research conclusions.

5. Convergence

The process of convergence, brought about by careful application of research constraints, does not in any way limit the usefulness of collected information, but rather provides the researcher with data more specifically germane to the study. The convergence, or focusing of the data relevant to the problem, allows the researcher to begin the last procedure in morphological analysis, the application of the selected value criteria.

The end product of this research is a vast data base with several hundred cases and related variables, all providing a large amount of potential information. What remains to be done is to query the data bank for specific areas of interest or value criteria. At this writing, almost a year has been spent in developing the methodology and data instrumentation necessary to support and perform a descriptive analysis of the intelligence community. Analysis-in-depth, in accordance with the questions posed by various areas of interest, promises lucrative results. Applications of the now existing methodology to other communities will yield data in a more timely manner, allowing similar research projects to devote more time to analysis. The analysis performed in this project was necessarily time-limited to a single value criteria application, and by way of example, the researchers chose to analyze the data from the point of view of management.

B. VALUE CRITERIA

1. Introduction

Although many of the Navy's managerial problems do not differ significantly from the ones facing any large organization, there are certain unique aspects peculiar to Naval institutions. These aspects are the results of the changing size of the Navy's organizations, the diversity of its requirements, the mobility and dispersion of its assets, and the rapid turnover and reassignment of its personnel. The cumulative result is an organization in a state of

continuous flux. Consequently, reorganization, consolidation, and expansion are continual ongoing managerial processes directed toward improving naval effectiveness and efficiency.

There are many methods available for bringing about improvement. They all use one or more tools to arrive at decisions. This section discusses the application of value criteria to specific instances. Although applications will be directed toward naval intelligence, it should be obvious that far wider applications can be made to other areas or communities.

The analysis which follows is by no means comprehensive but it should provide the reader with some indication of the applicability, versatility, and importance of the methodology. This will be accomplished through the following open-ended approach: proposing an area of potential interest, providing a brief description and application of a statistical methodology, presenting the results, proffering other points of interest, and proposing potential applications. This analysis applies the value criteria to primary levels of managerial concern: the organizational level and the personal development level.

2. Managerial Criteria Applied at the Organizational Level

a. Functional

One of the most important managerial aspects to be considered at the organizational level is the actual function or set of functions which is associated with a billet or a

position within an organization. There are many facets which a manager must consider when undertaking an evaluation of his organization or when planning for future contingencies such as cutbacks, reorganizations, or expansion. Some typical questions which he may ask are:

(1) What kind of functions are associated with each position or billet?

(2) Can the position or billet be identified with or placed within a broader or more generalized type or grouping of jobs?

(3) How much time is spent in direct, job-related functions and how can effectiveness be improved by assigning non-job-related functions to non-specialist personnel?

(4) Who is filling specific positions or billets and what are his potential capabilities based on his background and experience?

(5) Can any person be used more effectively within the organization?

Answers to some of these and similar questions can be obtained simply by direct query of a data base (i.e., Appendix G). The more detailed questions require more complex answers, derived by methods structured to a manager's needs and interpreted as appropriate for the situation. Other questions may require answers derived by the latest and most sophisticated statistical procedures.

One such question, of high interest in this project and related to the questions above, was whether or not certain broadly defined "jobs", common to widespread locations and organizations, existed within the field of study. Theoretically such a job-type would be characterized by a specific grouping

of outputs which would be common to all the respondents who performed that job.

Computer analysis was performed in two steps. First, the data was tested to determine whether or not clusters of outputs varied together as groupings. Second, the respondents who performed generalized sets of functions were identified.

The initial search for clusters was performed using factor analysis techniques contained within the Statistical Package for the Social Sciences (SPSS),[2] a set of computer programs available to the researchers. Two schemes for orthogonal factor rotation were used, QUARTIMAX[3] and VARIMAX.[4] No groupings were identifed using these techniques, however.

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[2]Nie, Norman, Statistical Package for the Social Sciences, pp. 208-244.

[3]Ibid., p. 223; "The guiding principle of QUARTIMAX rotation is to make the complexity of a variable minimum, that is, to rotate the initial factors in such a way that a variable loads high on one factor, but almost zero on all others."

[4]Ibid., p. 224; "In contrast to QUARTIMAX, which centers on simplifying the rows of a factor matrix, the VARIMAX criterion centers on simplifying the columns of a factor matrix. Note that in QUARTIMAX many variables can load high or near high on the same factor (because the main focus is on simplifying the rows), but VARIMAX defines a simple factor as one with only 1's and 0's in the column.

Such a simplification is equivalent to maximizing the variance of the squared loadings in each column. Hence the name VARIMAX. This method of rotation is the most widely used and is in a way a modification of QUARTIMAX."

Further searching for clusters was performed using partial correlation techniques[5] which are also contained within the SPSS package. Two major output clusters resulted:

a. "Administrator": Intelligence Office Administration,
Resource-Organizational Management,
Budget and Fiscal Plans,
Physical Security.

b. "Analyst": Briefs and Debriefs,
Data Analysis
Intelligence Annexes to Operational Orders (OPORDS),
Estimates,
Intelligence Information Reports,
Orders of Battle (OOB),
Tactical Plots.

A minor grouping, consisting of Intelligence Collection Plans and Intelligence Collection Tasking, also resulted. In order to test whether or not the cases associated with the two major groupings prevented other such output clusters from being identified, another analysis was performed on only those cases which indicated that less than 50% of their time was spent performing either major cluster or outputs. No new grouping appeared.

After these two clusters of outputs, named "administrator" and "analyst", had been identified, the next step was to isolate the actual cases which were associated with the outputs themselves. Immediately there was the

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[5]Ibid., pp. 157-173; Partial correlation pairs every output variable against every other output variable, while controlling for rank, in order to derive a measure of association for each combination of variables.

problem of determining how much time must be devoted to one of the groupings of outputs before a person could be identified as performing that general job-type. An arbitrary value of 60% was assigned. Using this 60% figure as a minimum value for selection, 38 respondents (12%) were identified as "administrators", and 34 respondents (10%) were identified as "analysts." Since only two cases (.6%) met the minimum value for the grouping which consisted of Intelligence Collection Plans and Intelligence Collection Tasking, this cluster was not considered to be a generalized job-type.

It was thus determined that only two general job-types could be identified: a) administrator and b) analyst. These two categories included 11 of the 19 listed outputs (58%) but accounted for only 22% of all respondents. Even lowering the selection value to 50% of total work time, the clusters accounted for only 35% of all cases. Increasing the selection criteria to what is perhaps a more realistic requirement level of 70%, reduces the total explanation to the unacceptable level of 13%.

The conclusion can therefore be drawn that there is a large number of people who produce similar outputs in the naval intelligence community, but that their functions do not fall into easily generalized job-type categories. Further analysis and additional conclusions are possible at this point.

b. Fiscal

Although time constraints made it impossible to take more than a cursory look at the wealth of information available in the data, it was obvious from the beginning that many subjects of organizational interest to a manager could have been investigated. Another such area was fiscal planning. Here, too, a manager could pose appropriate questions and expect to receive significant information. Questions might pertain to locations and descriptions of facilities and personnel involved in a given process, numbers and quality of material or logistic support required and provided, or funds and facilities needed for education and training. The list is indefinite in length and depends solely upon the imagination of the manager for applicability and completeness.

c. Manpower Allocation

Still another area of interest could be that of manpower allocation. From the data base it would be possible to extract a significant amount of information concerning personnel, where they are, how long they have been there, what they are doing, how long they expect to be there, what pay grades they occupy, what jobs are being done, whether certain jobs might be consolidated or relocated, what educational levels are located where and where they are needed.

d. Geographical or Spatial Considerations

Many questions concerning geography or location would arise as a consequence of the above manpower considerations. Not only would a manager be interested in what was

happening where, he would also be interested in whether there were differences in what was happening in different places. He might want to know if there were differences between commands on different coasts or between commands in the continental United States and those in foreign countries, or between commands in different foreign countries. It might be beneficial to determine whether one area was more involved in analysis than another or whether more management expertise was required in one place than another.

3. Managerial Criteria Applied at the Personnel Development Level

The functional analysis discussed above demonstrated that the diverse range of billets open to today's subspecialist requires that he possess a broad educational background. The process by which the officer gains that background is a combination of formal training, on-the-job experience, and higher education. Naval management can utilize data, such as that collected by this project, to identify and trace the experience, training, and education of the officers under study. Of particular interest to this project was the impact of higher education on the intelligence community and it was to that area of personnel development that the researchers concentrated their limited analysis.

Application of the managerial value criteria to the project's data base at the personnel development level was

undertaken with two primary "policy areas pertaining to higher education management"[6] in mind:

(1) The exercise of financial prudence, economy, control of funds, and flow of capital: Proper management of educational assets required continuous study, evaluation, demonstration, and experimentation.[7] The methodology developed for this research provided data that is of value to the manager who attempts to evaluate the effectiveness of a particular program or curriculum within his community.

(2) The coordination of objectives, functions, and activities of higher education: The management and coordination of these elements requires an optimum level of communication and cooperation between the institution providing the education and the community utilizing the product.[8] It was felt that the community study undertaken in this project was ideally suited to the task of gathering data pertinent to this area of interest, as the Delphi techniques not only solicited the data, but provided a measure of community participation unknown in earlier studies.

Within these broad policy areas naval management may pose several specific questions: What educational subject

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[6]Thad L. Hungate , Management in Higher Education, New York: Columbia University, 1964, pp. 8-11.

[7]Ibid.

[8]Ibid.

areas apply most directly to individual billets within a community? If levels of expertise in these areas were established, how would the community describe its present use of the subject as opposed to the level it recognizes as needing? Once a generalized list of educational areas is identified and the various levels of expertise used and needed at present are stated, what does the community project as levels needed in the future? Finally, the manager must compare the requirements of the community to the objectives of the higher education programs offered, in light of the general policy areas discussed above.

a. Educational Data

It should be noted that the data used in the following general analysis is presented from a community-wide sample, and like the other parameter data in the base, it can be addressed by specific geographical location, organization, or several other definitive characteristics.

The first stage of the educational data analysis was accomplished by computing the raw percentage of responses recorded in the four levels given for each educational subject listed in Delphi B (see Appendix B Sample C). The educational subjects are listed in the tables included in this section. The scores resulting from the raw percentage computations gave only an indication of the levels most needed for each subject, but gave little information regarding the relative importance of the subjects compared to one another.

In order to provide ranking information, the second step of this analysis utilized "Condition B" of the Law of Categorical Judgement developed by W. S. Torgerson.[9] This technique uses categorized, ordinal data (which is assumed to be normally distributed and independent among subject areas) to derive an interval scale ranking of all educational areas listed on the Delphi. A computerized Method of Successive Intervals (presented in Appendix F Sample S) was developed from the Torgerson technique, and the Delphi B data was applied to it.

The three categories of educational data from Delphi B ("Used", "Needed", and "Future") are presented in Tables 9 through 11, listing the forty-two subject areas in order of importance to the population responding. The left margin of each table signifies a standard normal distribution scale value, which is not amenable to percentage interpretation, but does define the bounds of each level ("Expert", "Working", "Basic", and "No Need"). These educational levels, referring to the expertise required in each subject, were discussed in an earlier section. The tables provide information invaluable to educator and manager alike: the respondents' perception of the rank order of educational subjects relevant to the community, and their positions on a numerical scale relative to each other and to the bounds of each expertise level.

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[9] Warren S. Torgerson, Theory and Methods of Scaling, New York: John Wiley & Sons, Inc., 1958 , pp. 205-246.

TABLE 9

EDUCATIONAL LEVELS USED – DELPHI DATA

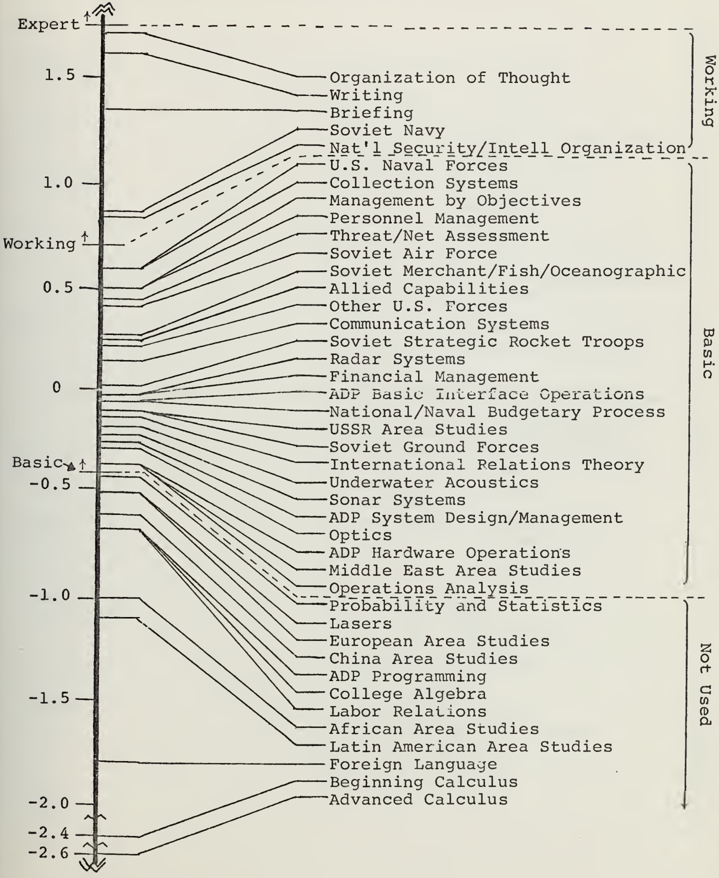


TABLE 10

EDUCATIONAL LEVELS NEEDED - DELPHI DATA

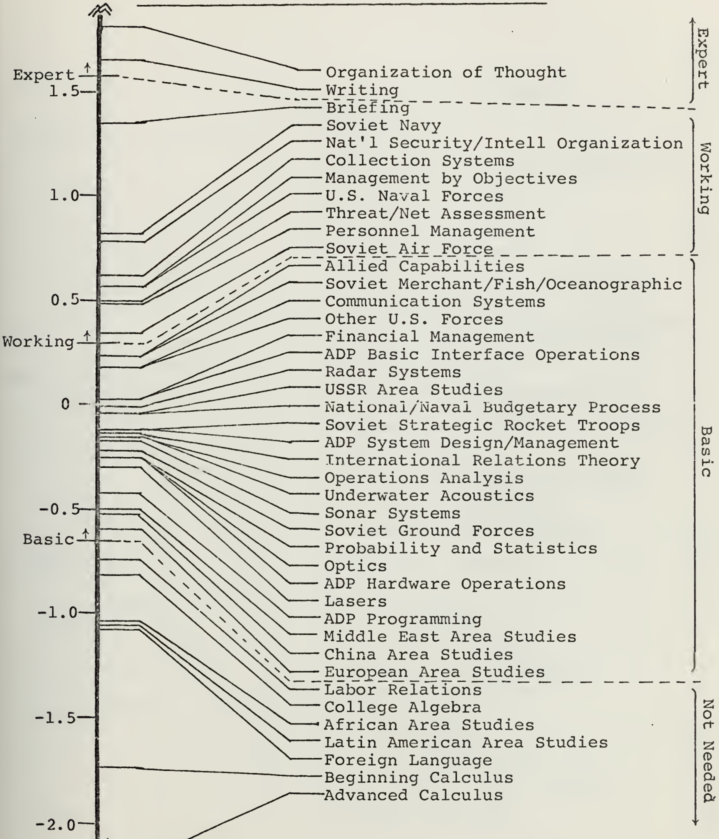
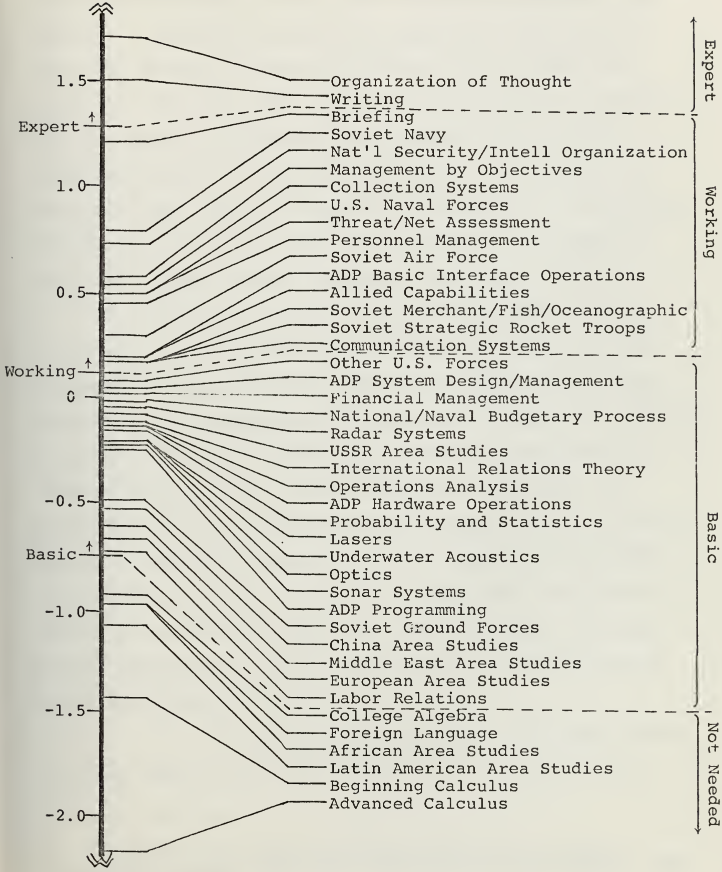


TABLE 11

EDUCATIONAL LEVELS FUTURE – DELPHI DATA



A similar analysis was performed on the educational data gathered during the interviews, and the results are presented in Tables 12 and 13 for "Used" and "Needed" categories. A Spearman's Rank Order Correlation Coefficient[10] was then derived to determine how well the interview data predicted the rank orders reported by the Delphi B response. In this test, an "R" value of +1.0 results from perfect correlation, an "R" value of -1.0 results from perfect but inverted order, and a 0.0 means no correlation. The Spearman correlations were, for the "Used" category, an R value of 0.75 and for the "Needed" category, an R value of 0.80.

Interpretations of the rankings shown in Tables 9 through 13 must be made with the thought in mind that the respondents were rating the educational areas only as they applied to the <u>performance</u> of their present jobs. The subjects were not measured as prerequisites for advanced training or special skills. Thus judging "Calculus" unnecessary for naval intelligence officers because it ranks low on the three Delphi B scales is premature; what the community has ranked is the day-to-day use of calculus, which hides the fact that it was a prerequisite subject, in school settings, for many of the respondents. Several other items of interest can be noted from study of the tables:

(1) <u>Trends Across the Data</u>. All three Delphi B tables list the top five subject areas in the same rank

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[10] Sidney Siegel, <u>Nonparameteric Statistics for the Behavioral Sciences</u>, New York: McGraw-Hill Book Company, 1955, pp. 202-213.

TABLE 12

EDUCATIONAL LEVELS USED – INTERVIEW DATA

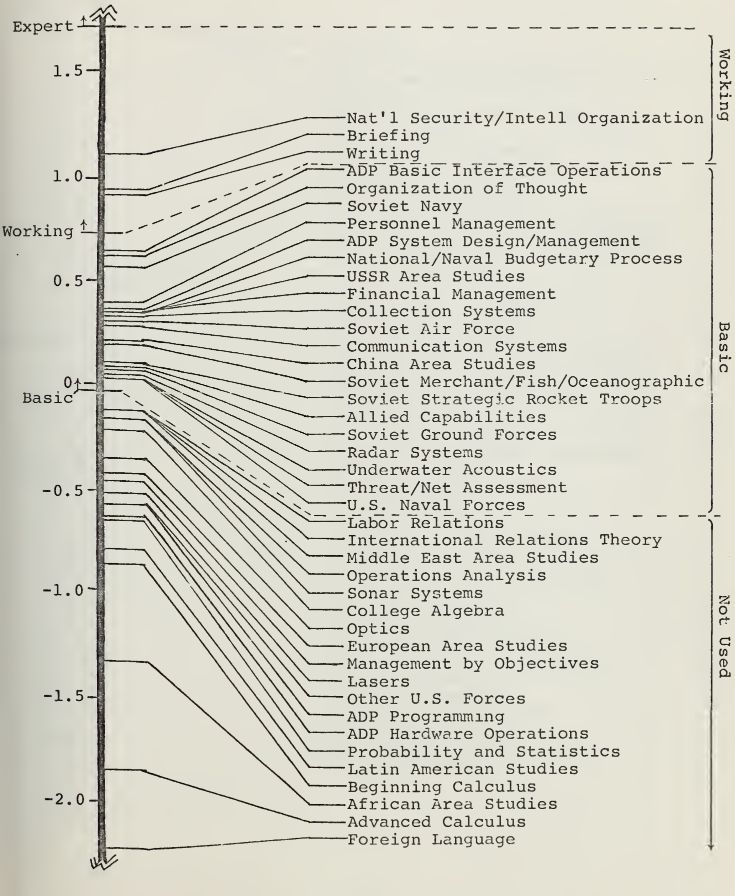
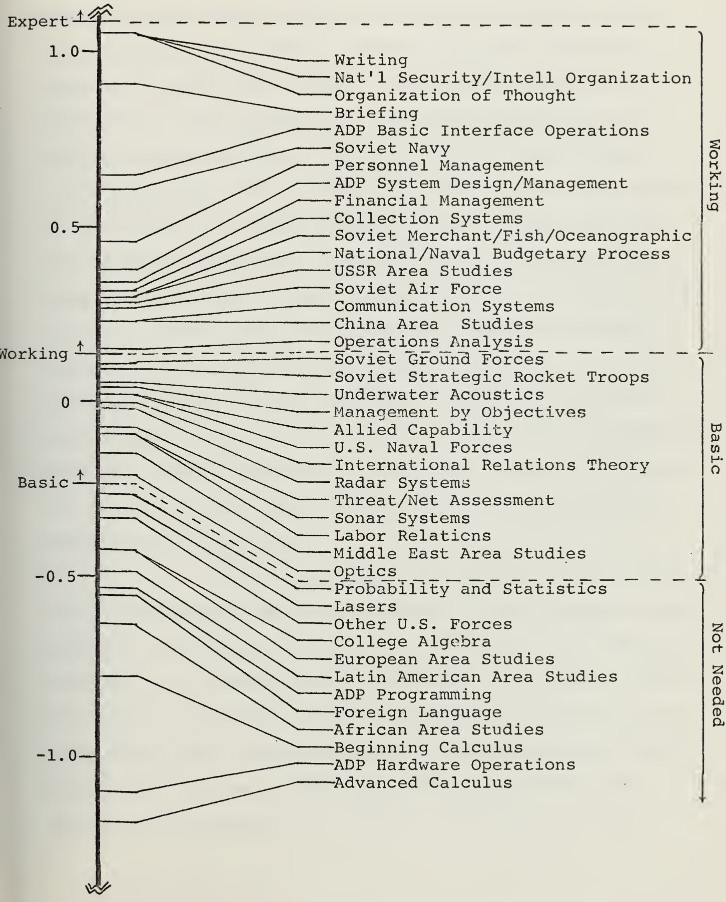


TABLE 13

EDUCATIONAL LEVELS NEEDED – INTERVIEW DATA



order, indicating that the community is in strong agreement as to the most important educational areas in the list. The community also seems to agree on the least important areas, as the bottom seven subjects showed only minor relative position changes and a gradual increase in expertise level with time. A shift upwards in knowledge required for all subject areas was noted in both the "Needed" and "Future" data, signifying that the community believes the requirements of the future will surpass those of today. Subjects within the computer skills area increased in level the most across time. A projection was made across the data by comparing the relative rankings among the subjects on each scale while minimizing the value of the benchmarks (the expertise level numerical bounds) across the scales. While the benchmarks were considered to be good estimates of the level of expertise measured for the "Used" data, their positions on the "Needed" and "Future" scales must be judged with caution, due to the subjectivity of the data.

(2) The High End. The highest ranking subjects on all three Delphi B scales included the basic communications skills. "Organization of Thought", "Briefing", and "Writing" were the top three subjects on the Delphi listings and were in the top five subjects ranked in the interviews. While it is no surprise that the community considers communication skills important, it is noteworthy that this much agreement was reached on any subject.

(3) The Low End. At the opposite end of the scales, the community more or less agreed that the various "Area Studies" were among the least important subjects. A possible exception was the "USSR Area Studies", which ranked somewhat higher, being placed near the median on all three Delphi B scales. Applications of advanced mathematics also ranked consistently low on the Delphi B listings, as was pointed out earlier.

(4) Technical Subjects. Knowledge of "Collection Systems" was ranked highest among the technical subjects, with "Communication Systems" placing second in interest. A significant change in the need for knowledge regarding "Lasers" was noted across the Delphi B scales, as was the shift in computer skills discussed above. The community consistently ranked Soviet Military Capabilities above most technical subjects.

(5) Management. The community recognized "Management by Objectives" and "Personnel Management" as the most important subjects in that field, and placed subjects relating to the budget process and resource management consistently around the median.

A final comparison was made between the Delphi B rankings and the interview data. Allowing for minor position changes, the top ends and the lower ends of the scales corresponded well, as did the relative placement of most of the technical subjects. In both the "Used" and "Needed"

scales, the interviewers consistently placed the ranked subjects a full expertise level lower than did the community respondents. The areas of widest divergence occurred where the interview data placed computer skills and most "Area Studies" higher and knowledge of "US/Allied Capabilities" lower than they were rated by the community. Figure 4 demonstrates graphically where the various subject areas fell in the four categories both for the interview data and Delphi B.

As was the case with the functional (output) data discussed earlier, there are several other potential uses for the educational and personnel development level data contained in a study such as this.

b. Career Patterns

The advent of the Operational Technical Management System (OTMS) for naval personnel management ushered in a new emphasis on the importance of sub-specialists, and those billets in the shore establishment that require them. Analyses of specialized communities such as naval intelligence can provide OTMS with a great deal of information about billets and the officers that fill them. OTMS is designed to insure optimum utilization of specialized officer personnel as they rotate between operational and support organizations. The personnel development level data provided by this and similar community analyses can aid the OTMS manager in fulfilling that system design goal by furnishing both the educational requirements set by the organizations, and the present qualifications

FIGURE 4

SUMMARY OF EDUCATIONAL DATA CATEGORIES*

Category	Interview		Delphi-B		
	Used	Needed	Used	Needed	Future
Expert				42 41	42 41
Working	22 40 41	41,22,42 40 34,23 36 31,37 20,27,38, 6,24 16,7	42 41 40 23,22	40 23,22 20 35,28 21,36 24	40 23,22 35,20,28 21,36 24 34,30,27 26,16
Basic	34,42 23 36 31,38, 6, 37 20,24,16 7,27 26,30,25 17,14,21 28	25,26 14,35 30,28 13,17 21,15,39 8 18	28,20 35,36 21,24 27,30,29 16 26,17,37, 34,38 6,25,13 14 15 31,18 32, 8,12	30,27 16,29 37,34 17 6,38 26,31,13 12,14,15 25, 4,18, 32 19 33 8, 7 9	29,31,37 38,17, 6 13,12,32 4,19 14,18,15 33 25,7 8 9 39
Not Needed	39,13, 8 12,15 1 18 9,35 19 29,33 32, 4 10 2 11 3 5	4 19 29 1, 9 10 33, 5 11 2 32 3	4 19, 9 7 33, 1,39 11 10 5 2 3	39 1 11,10, 5 2 3	1 5,11 10 2 3

* See Key on next page.

KEY FOR FIGURE 4

1. College Algebra
2. Beginning Calculus
3. Advanced Calculus
4. Probability and Statistics
5. Foreign Language
6. USSR Area Study
7. China Area Study
8. Middle East Area Study
9. Europe Area Study
10. Latin America Area Study
11. Africa Area Study
12. Operations Analysis
13. International Relations Theory
14. Underwater Acoustics
15. Sonar Systems
16. Communication Systems
17. Radar Systems
18. Optics
19. Lasers
20. Collection Systems
21. Threat/Net Assessment
22. National Security/Intelligence Organizations
23. Soviet Naval Forces
24. Soviet Air Forces
25. Soviet Ground Forces
26. Soviet Strategic Rocket Troops
27. Soviet Merchant/Fishing/Oceanographic Fleet
28. U.S. Naval Forces
29. Other U.S. Forces
30. Allied Capabilities
31. ADP System Design/Analysis (Management)
32. ADP Hardware Operations
33. ADP Programing
34. ADP Basic Interface Operations
35. Management by Objectives
36. Personnel Management
37. Financial Management
38. National/Naval Budget Process
39. Labor Relations
40. Briefing
41. Writing
42. Organization of Thought

held by the officers available. Further, these data may be recorded and correlated over time.

c. Temporal Changes

The dynamic design of this methodology can be capitalized upon by tasking analysts to monitor the educational levels existing within a community such as naval intelligence as they change with time. Recurrent Delphi instruments, addressed to either billets or individuals, can periodically update the data originally gathered. Data analysis can then detect changes or trends in the community which may relate to the introduction of graduates from the Naval Intelligence curriculum, changes in the technical requirements of intelligence, or other factors. The OTMS manager will also benefit from temporal change study, as he monitors and evaluates the sub-specialist detailing process.

d. Human Goals Impact

The methodology and resultant data offered by community studies such as this one can easily be expanded in other related personnel development fields of naval interest such as the Human Goals Program. Utilizing the Delphi technique, attitude surveys can take on new relevancy for the community. When combined with other research objectives, human goals data can be gathered with more legitimacy than has been the case in the past, and the Delphi technique can provide an excellent opportunity to communicate ideas of such a program.

VII. CONCLUSION

A. INTRODUCTION

The concluding section of this paper returns to the original problematic statement made at the beginning of the research project and offers the solution to it. It then points out that the methodology developed during the course of this study of the naval intelligence community has potential application, because of its general nature and ease of data collection, to the study of other specialized communities such as those of Aviation Engineering Duty Officers and Computer Science subspecialists.

The research process involved with this project has generated several "spin-offs" which have applications to other research efforts and projects. These by-products are discussed in this section and are followed by a list of recommendations, which are made in an effort to help those who may be considering undertaking studies such as this one in the future.

B. THE PROBLEMATIC STATEMENT

The problematic statement set down at the beginning of this research was: "Describe the naval intelligence community." Inherent in that statement was the assumption that there was an identifiable community of intelligence specialists and sub-specialists existing within the naval service, linked by some as-yet-unnamed commonalities. The hypothesized

commonalities were loosely identified with the "parameters" of morphological analysis and the researchers began the processes of data collection and manipulation in order to arrive at the desired community description.

The intelligence community as it exists in the Navy has been described empirically throughout this paper and its appendices. The descriptions vary according to the specific parameter data addressed and the differing interests of the individual seeking the information. The results of the functional analysis in Section VI for instance, empirically support the "intuitive" statement that the community has few billets which functionally resemble one another. Even those billets which carry the same billet titles in different organizations seldom produce the same mix of outputs.

Further demonstrating the flexibility of the research results, the computerized base containing the community description can provide the data while controlling for geographical locations of billets or organizations, specific officer ranks involved, educational requirements or personal backgrounds, specific intelligence outputs or functions, and numerous other factors and variables.

To say that the naval intelligence community is diverse is to understate the entire project, and yet the data from this research can provide descriptions of the community that are as detailed or general as necessary, and as numerous as the researchers posing the questions.

C. APPLICATIONS OF THE METHODOLOGY TO OTHER SPECIALIZED COMMUNITIES

The advantages of this methodology over other more specific forms of community analysis lie in the essence of the morphological approach. The approach capitalizes on generality and can utilize a variety of data-gathering instruments.

1. Generalities versus Specifics in Community Analysis

Task analysis, as documented by the Manpower Management Institute[1] and other literature requires extensive in-depth study of specifics relating to a particular job's outputs and functions. The depth of such analysis dictates that the research team be integrated into the organization under study and that each job be monitored continuously for long periods of time. The nature of specialist communities such as naval intelligence rule out most procedures necessary for "true" task analysis. Details of security, time available with individual officers, and problems associated with the fluidity of the community have been discussed earlier. These considerations require that the methodology developed to study the community be one that allows flexibility, generality, and ease of population response. Morphological analysis, as modified and adapted to this research, fits those requirements well.

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[1] Manpower Management Institute, Techniques of Task Analysis, Washington, D.C.: MMI, N.d.

2. Variety of Data-Gathering Instruments

The ease with which morphological analysis can be applied to the study of specialized officer communities was aptly demonstrated by its variety of acceptable data-gathering instruments. Of all the instruments described earlier, the Delphi technique proved to be the most effective means to solicit necessary data and to insure a high population response. By providing the individuals with feedback concerning how their responses "fit" in with the overall community response, the Delphi generated increased interest in the project. Additionally, the Delphi technique was well suited to the computer facilities available locally, both for data collection and subsequent data processing. The generalized procedures concerning the Delphi technique discussed in earlier sections and described technically in the appendices can lend themselves well to applications in other community/curriculum studies.

The generality of the methodology developed in this research, and the ease with which the data-gathering instruments can be generated and administered contribute to the overall applicability of the approach to other communities of specialized individuals. Examples of other communities which might benefit from such a study might be Aviation Engineering Duty Officers (AEDO) and Computer Science subspecialists (p-code 8530).

3. <u>The Aviation Engineering Duty Officer Community</u>

AEDO billets exist within naval aviation, both at sea and in the shore establishment. The utilization of these highly specialized aviators and flight officers in sub-specialist billets, and additionally their attitudes and perceptions regarding that utilization, could be an interesting research objective which would lend itself well to study with this approach. Recommendations from the AEDO community regarding curriculum specifics would be easier to arrive at, since most AEDO designates are graduates of the NPS programs and would therefore be more qualified to comment on the educational requirements of their community.

4. <u>Computer Science Sub-Specialist Community</u>

Computer Science (p-code 8530) and its related Systems Management subspecialties make up a community that differs from AEDO and naval intelligence in that they exist through billets spread across the spectrum of naval organizations, ashore and afloat. While AEDO designates remain in the aviation community and since intelligence subspecialists rarely fill p-code billets outside naval intelligence, 8530 designated officers can serve in billets in almost every community in the naval service. The possibilities of conducting analyses of the various computer science and management subspecialist groups are fascinating and the potential relevance of such studies to the Operational Technical Management System (OTMS) is most promising.

Besides these two examples of communities which would benefit from a study such as this project, there are several other suggested areas for similar research. One of the most interesting and potentially rewarding of these areas might be in the Medical Corps of the naval service. With the increased emphasis on health services in the Navy today, research methodologies such as the one outlined by this project can provide useful data for the efficient utilization of medical officer assets, both ashore and afloat.

In the course of developing this methodology and conducting the research, several "spin-offs" were generated which have value and applicability in other fields besides this analysis.

D. SPIN-OFFS

1. Highly Personalized Approach — Using Computerized Procedures

Extensive use of computer facilities allows the researchers to tailor their research vehicles specifically to the population. Letters were addressed to individuals by name and were written in an informal language to catch the attention of the reader. In that way each reader felt personally involved rather than being put off by just another letter written in official "navalese." Succeeding letters, written by computer, included comments concerning each individual's previous submission. The project ended with another personalized letter which expressed gratitude for

the assistance provided and gave figures which showed how important each individual contribution was.

All research vehicles were kept short, simple, and easy to complete. It was intended that no questionnaire take more than ten minutes to finish. In that way it was hoped that a significant number would be returned within a reasonable time frame.

Once machine procedures had been set up, the project could have been expanded, with little difficulty, to include an even larger population (such as the entire naval intelligence community [1000+ billets]). The only significant problem would have been that of keeping track of such a "mobile panel." Although having more than 300 people involved in a Delphi panel is not unheard of, having more than 100 is uncommon.

The response ratio was exceptionally high. Although Martino states that "Response rates typically run 50% or less, and six to eight weeks are sometimes required to get even that many responses,"[2] the researchers got an unprecedented 80% to 85% return within successive 30 day periods. Considering that the project lasted more than eight months, that the population consisted of more than 300 individuals, and that there was movement of these individuals during this period, those return ratios were phenomenal.

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[2] Martino, Technological Forecasting for Decision Making, p. 54.

2. Computerized Delphi Production Procedures

Computerized analysis of data is common in the Delphi technique. Even interactive computerization, which is used to a lesser extent, is not uncommon. The computerized printing of personalized questionnaires including feedback of earlier responses, as discussed above, is considered a novel approach. Value judgments must be made however on the value of the resources expended versus the resultant return of data.

The ALGOL/FORTRAN linkage (which tied ALGOL, FORTRAN, and TPS together), once made, greatly simplified the necessary processing requirements. Heretofore undocumented procedures were used to "link" ALGOL with FORTRAN in order to combine ALGOL's alphabetic-string manipulation capability with FORTRAN's input/output capability. (See section entitled: "Computer Language and Packaged Program Coordination")

3. Multivariate Analysis of Variance (MANOVA)

The large number of variables associated with each of the various data collection instruments presented a problem in the area of methodological evaluation. In order to avoid some of the difficulties stated in Sackman's critical review of previous Delphi studies (See section entitled: "Methodological Evaluation"), an attempt was made to find an appropriate evaluative technique. Multidimensional analysis of variance was one such technique but the only preprogrammed version of the procedure available was for one-way and two-way

analysis of variance algorithms. Finally a Cooley-Lohnes FORTARN MANOVA program listing was located. This significant and powerful ("robust" in the Cooley-Lohnes terminology) technique provided for up to a 50-way multivariate dispersion analysis calculation. Since their program logic could be expanded, it was appropriately modified and is now available for local use.

E. RECOMMENDATIONS

1. Do not try to use "Task Analysis" procedures for so large and diverse a population as the one studied here unless the research assets allow for more interviews, participatory observations, and other procedures described by the Manpower Management Institute. Such procedures were designed primarily to identify a relatively small set of low level tasks performed by a small number of individuals and must be expanded for this sort of research. The procedures require a degree of researcher familiarization which is very difficult given the number and complexity of jobs in a project as large as this one.

2. Consider including more operational billets in the interview phase. Interview data is easier to collect from the shore establishment but the exclusion of data from the operational forces could bias the sample.

3. Consider a method for positively and accurately identifying and coding sub-specialist billets.

4. Do obtain respondent social security numbers. These are essential for keeping track of individuals over a long

period of time. When the original biographical data was being collected, the researchers were confused about how to retain the anonymity which all Delphi literature discussed. The researchers realized too late that the anonymity applied only to the relationships among respondents and not to the relationship between respondent and researcher.

5. Do make provision for identifying billets within a command. Requesting Billet Sequence Codes (BSC) from the respondents themselves was not always successful.

6. Do explain the Delphi procedure. It is still a technique with which relatively few people are familiar.

7. Do be informal. Do be brief. Do be simple. Do give feedback. Research conducted in this manner will be rewarded with a high degree of response.

APPENDIX A

INTELLIGENCE ORGANIZATION STRUCTURES

SAMPLE A

ADVANCE COPY

→ 38

DEPARTMENT OF THE NAVY
NAVAL INTELLIGENCE COMMAND
2461 EISENHOWER AVENUE
ALEXANDRIA, VA 22331

IN REPLY REFER TO
Ser NIC-01/735

20 AUG 1974
381
382
Post/Pul

From: Commander, Naval Intelligence Command
To: Distribution List

Subj: Graduate Education Task Analysis Research Study

1. A group of student and staff members at the Naval Postgraduate School, Monterey, California, are conducting a task analysis of the naval intelligence community. The purpose of the study is to establish a data base for ascertaining present and future educational requirements. This data base will be used by the Board of Curriculum Review to evaluate and improve the Naval Intelligence Curriculum at the Naval Postgraduate School. Moreover, it will also establish a means of reflecting field/fleet intelligence activity needs.

2. Within the next two months, selected naval intelligence personnel will receive questionaires from this group. Also, during September 1974, personal interviews will be conducted for specific billets in the Washington, D.C. area by LCDR D. L. Mount, LT. W. I. Foster, and LT. N. M. Bickell; in the Norfolk area by LT. E. W. Huber, and in the Hawaii area by LT. T. R. Watson.

3. The nature of this study contains many inherent obstacles, foremost of which is the sensitivity of the information which must be discussed during the personal interviews. Please understand that this project has my personal support and interest. I request that you give every assistance for a successful conclusion. The importance of providing information in an honest and candid manner cannot be over-emphasized. The only way to realize the full potential of this vital educational process is to keep it alive in meeting all of the needs of Navy intelligence. Everyone is urged to set aside the short amount of time which will be necessary to complete this task analysis in a timely manner. Little immediate substantive relief in your work load will result, but the viability of the curriculum does rest on its successes in improving the important contributions of naval intelligence to the overall goals of the Navy.

E. F. RECTANUS

APPENDIX A

SAMPLE A (continued)

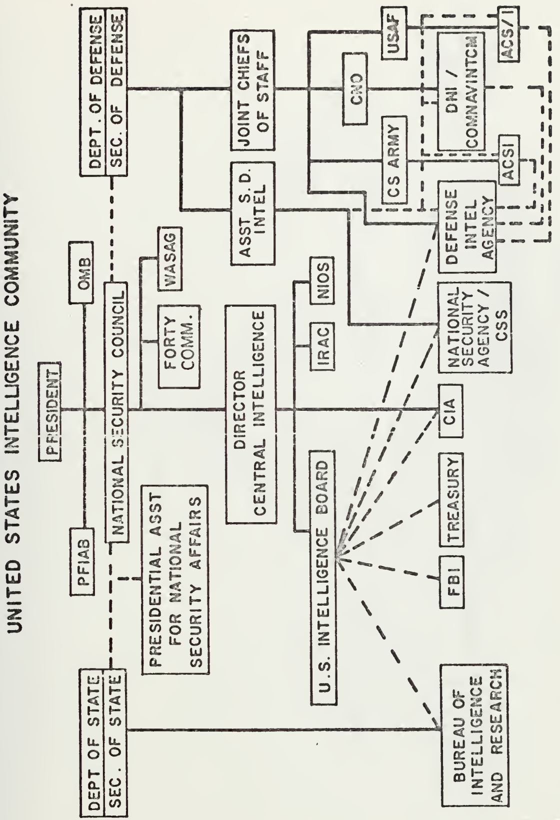
Ser NIC-01/735

Distribution List:
CINCLANTFLT (N-2)
CINCPACFLT (N-2)
CINCUSNAVEUR (N-2)
DIRNAVINVSERV
NISC
NIPSSA
FICPAC
FICEURLANT
NOSIC
FOSIC NORVA
FOSIC PEARL
FOSIC LONDON
FOSIF ROTA
FOSIF WESTPAC

Copy to:
Navy Postgraduate School

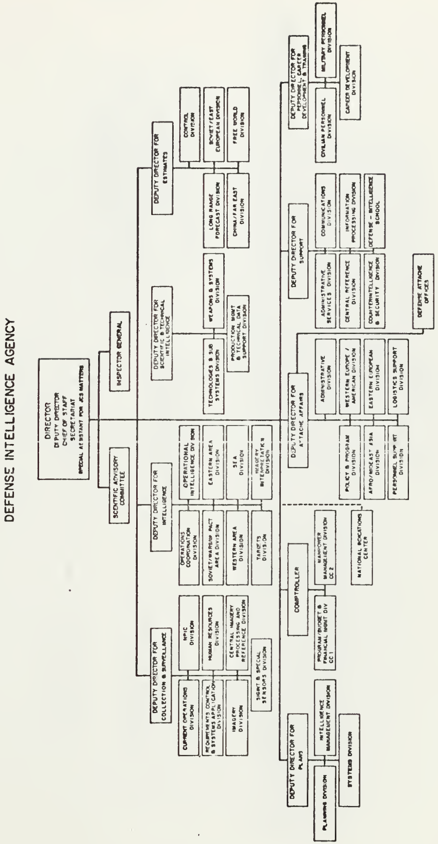
APPENDIX A

SAMPLE B



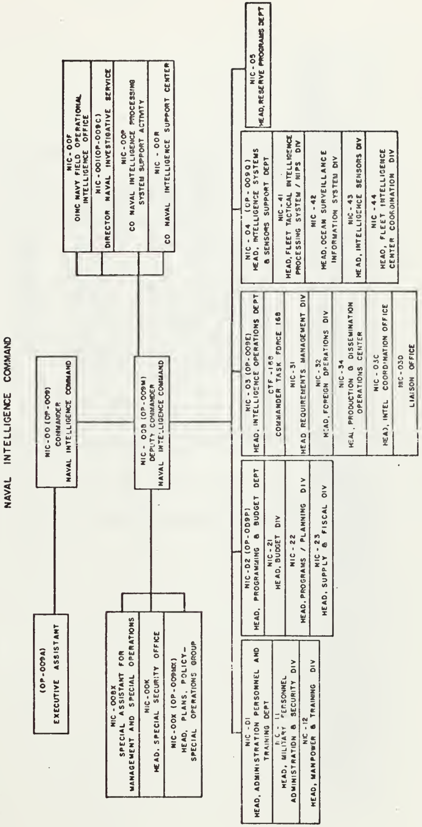
APPENDIX A

SAMPLE C



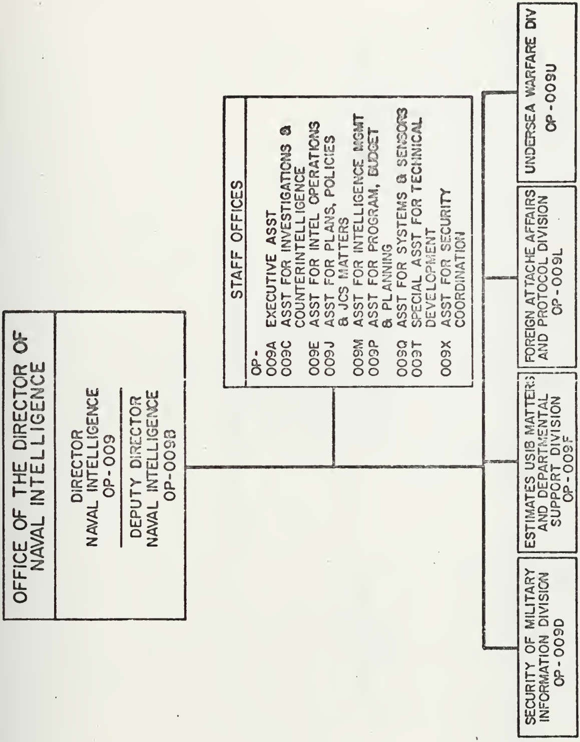
APPENDIX A

SAMPLE D



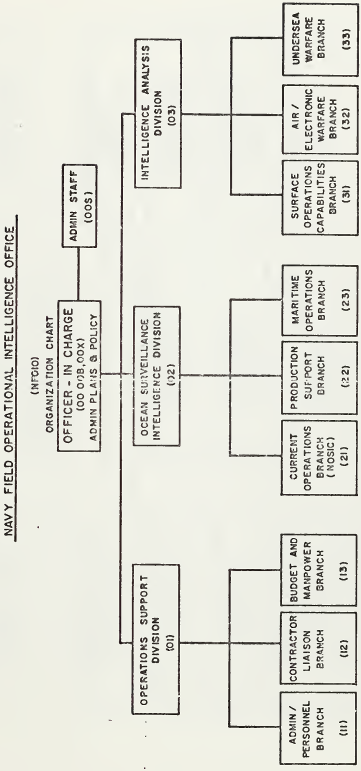
APPENDIX A

SAMPLE E



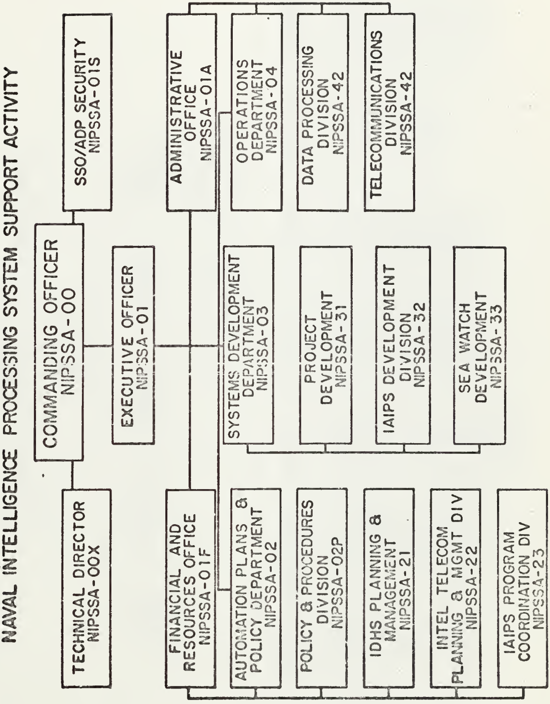
APPENDIX A

SAMPLE F



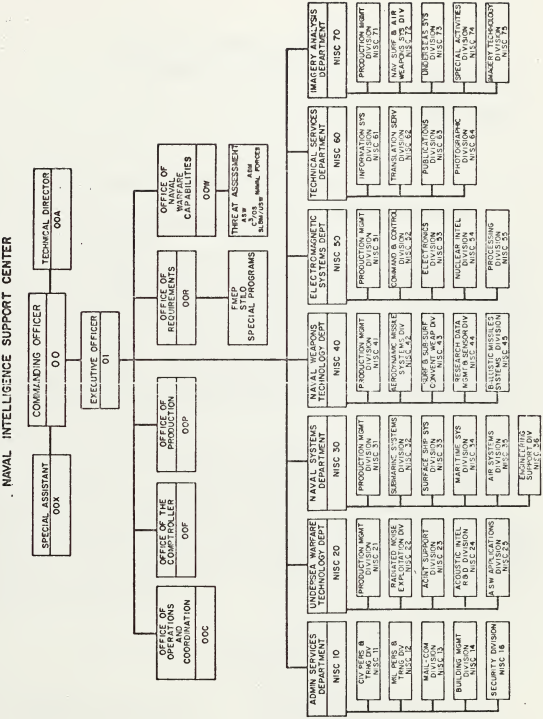
APPENDIX A

SAMPLE G



APPENDIX A

SAMPLE H



APPENDIX B

SAMPLE A

19 AUGUST 1974 DELPHI "A" QUESTIONNAIRE

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA - 93940

IN REPLY REFER TO:
NC4(382)/bh
1211
AUG 1 9 1974

To: Distribution

Subj: Task Analysis Questionnaire, forwarding of

Encl: (1) Task Analysis Questionnaire Instruction Sheet
(2) Task Analysis Questionnaire

1. It is requested that enclosures (1) and (2) be distributed within your command to the incumbents of all U. S. Navy LCDR through CAPT billets who are involved in the intelligence process. The questionnaire is an initial, deliberately unstructured and loosely defined part of a more sophisticated research project which seeks to provide a model for improving the curriculum development, evaluation, and management process. The goal of this research is to validate a methodology which will insure the inclusion of present and future needs of the fleet for advanced education in the Naval Intelligence Curriculum. This research has the support and interest of Commander Naval Intelligence Command.

2. The results of the survey will be analyzed by students as part of thesis research for a graduate level educational program. Anonymity of the responses is assured. Only aggregated statistical data will appear in published findings. Careful consideration has been given to the need for classifying responses and the data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Your assistance in this matter is sincerely appreciated.

D. W. Kiley

D. W. KILEY
By direction

Distribution:
USS SARATOGA (CV-60) (1)
USS INDEPENDENCE (CV-62) (1)
USS KITTY HAWK (CV-63) (1)
USS HANCOCK (CVA-19) (1)
USS ORISKANY (CVA-34) (1)
USS MIDWAY (CVA-41) (1)
USS F. D. ROOSEVELT (CVA-42) (1)
USS CORAL SEA (CVA-43) (1)
USS FORRESTAL (CVA-59) (1)
USS RANGER (CVA-61) (1)
USS CONSTELLATION (CVA-64) (1)
USS AMERICA (CVA-66) (1)
USS KENNEDY (CVA-67) (1)
USS ENTERPRISE (CVAN-65) (1)
USS BLUE RIDGE (LCC-19) (1)
USS MOUNT WHITNEY (LCC-20) (1)

Distribution (Continued):

NAF LAJES (1)
NAS CECIL FIELD (1)
NAS KEY WEST (1)
COMIDEASTFOR (1)
NB GUANTANAMO (1)
NB SUBIC (2)
JSTPS (12)
COMCARGRU ONE (1)
COMCARGRU TWO (1)
COMCARGRU THREE (1)
COMCARGRU FOUR (1)
COMCARGRU FIVE (2)
COMCARGRU SIX (1)
COMCARGRU SEVEN (1)
MISSILE CENTER PT MUGU (1)
NOSIC (12)
FOSIC NORFOLK (3)
FOSIC LONDON (5)
FOSIF ROTA (4)
FOSIF WESTPAC (4)
NUWEPNTRAGRUPAC (2)
COMNAVAIRLANT (3)
COMNAVAIRPAC (3)
COMFAIRMED (3)
COMFAIRKEF (1)
COMPATWING ONE (1)
COMPATWINGSLANT (1)
COMPATWINGSPAC (1)
COMPHIBLANT (1)
COMPHIBPAC (2)
COMPHIBRON ONE (1)
COMPHIBRON THREE (1)
COMPHIBRON FIVE (1)
COMPHIBRON SEVEN (1)
COMNAVSOUTH/COM15 (2)
USSOUTHCOM (1)
CINCEASTLANT (1)
CINCUSNAVEUR (3)
COMNAVFORJAPAN (5)
COMNAVFORKOREA (1)
CINC UNC/USF KOREA (10)
COMICEDEFOR (1)
COMANTDC (1)
COMUSTDC (4)
USMAC JUSMAG THAI (1)
COMSECONDFLT (5)
COMTHIRDFLT (3)
COMSIXTHFLT (4)
COMSEVENTHFLT (7)
CINCAL (1)
CINCPAC (24)
CINCPACFLT (18)
CINCLANT (15)
CINCLANTFLT (10)
NIPSSA (10)
DIA (170)
FICEUR (14)
FICPAC (14)
FICLANT (10)
NISC (37)
PACOMELINTCEN (4)
LANTCOMELINTCEN (2)
NIPSTRAFAC (2)
CTF 168 (7)
CTG 168.1 (2)
CTG 168.2 (2)
CTG 168.3 (2)
FITCLANT (2)
FITCPAC (3)
COMNAVINTCOM (34)
NFOIO (12)
NISHQ (7)
NISO CHASN (2)
NISO EUROPE (2)
NISO JAPAN (2)
NISO MARIANAS (1)
NISO NEW ORLEANS (2)
NISO NEW YORK (2)
NISO NORFOLK (2)
NISO HAWAII (2)
NISO PHILADELPHIA (3)
NISO SAN DIEGO (2)
NISO SAN FRANCISCO (2)
COMCRUDESGRU EIGHT (1)
COMCRUDESGRU TWELVE (1)
NAVCOSSACT (2)
FASOTRAGRULANT BRUNSWICK (1)
CNA (3)
COMFLTCORGRU TWO (1)
COMCARIBSEAFRON (4)
COMEASTSEAFRON (1)
COMSUBGRU FIVE (1)
COMSUBGRU SEVEN (1)
COMSUBGRU EIGHT (1)
COMSUBLANT (2)
COMSUBPAC (1)
COMAEWWINGPAC (1)
COMRECONATKWING ONE (1)
VC ONE (1)
VQ ONE (3)
VQ TWO (2)
COMATWING ONE (1)
PHIBSCOL CORONADO (1)

A TASK ANALYSIS OF THE NAVAL INTELLIGENCE COMMUNITY TO DETERMINE EDUCATIONAL OBJECTIVES

Introduction

The attached questionnaire is part of a research study being conducted at the Naval Postgraduate School, Monterey, California. The purpose of this study is to determine educational objectives which reflect current and changing needs of naval intelligence. It is anticipated that the final product will serve as the foundation for further study and as a part of the continuing process of restructuring the naval intelligence curriculum.

This questionnaire is designed to acquire personal and background information about your particular billet. When processed, this information will assist in the selection of the functions which best represent overall naval intelligence activities. Based on this information, key billets in Washington, Norfolk, and Hawaii will be selected for personal interviews in September 1974.

This study pertains to tasks performed by naval officers who provide intelligence related outputs [see page 2 of enclosure 2]. Survey questions should be answered on the basis of what is required in the performance of the jobs or tasks which you presently perform.

Security Aspects

Careful consideration has been given to the need for classifying your response and the data which will result. The questions

Enclosure (1)

involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire.

Handling

A return envelope is enclosed for your convenience. Questionnaires and additional comments should be addressed to:

Superintendent (Code 382, T. A. Group)
Naval Postgraduate School
Monterey, California 93940

Point of contact is LCDR R. W. Chapin, the Naval Intelligence Curriculum Officer, AUTOVON 479-2111/2228.

I. Individual Information

Command ______________________________

Billet Sequence Code ______________________________

Billet Title ______________________________

Office location ______________________________

Name ______________________________

Rank ______________________________

Age ______________________________

Designator ______________________________

Previous designator, if applicable ______________________________

Billet Subspecialty Code ______________________________

Respondent's Subspecialty Code ______________________________

Highest educational level achieved ______________________________

Specialized training used in this billet ______________________________

____

Is this your first intelligence billet? ______________________________

If not your first, how many years previous intelligence experience do you have, excluding this tour? ______________________________

How many months have you been in this billet? ______________________________

Enclosure (2)

II. Outputs and Time Allocation

The following table lists the primary intelligence outputs which have been delineated by the research group. It is desired that you indicate the percentage of your time which is devoted to each of the various outputs. After completing this list, please indicate whether you feel each listed output is a valid output for the intelligence community in general. Space is also allotted for any additional outputs which you feel should be included.

			Valid?
1.	Administration of intelligence office	____%	____
2.	Briefs and debriefs	____%	____
3.	Budgets and budgeting	____%	____
4.	Charts and audio/visual aids	____%	____
5.	Counterintelligence studies	____%	____
6.	Data analysis	____%	____
7.	Decisions and recommendations	____%	____
8.	Estimates	____%	____
9.	Intelligence annexes to OPORDs	____%	____
10.	Intelligence collection plans	____%	____
11.	Intelligence collection tasking	____%	____
12.	Intelligence Information Reports	____%	____
13.	Intelligence studies	____%	____
14.	Interface with ADP/telecommunications	____%	____
15.	Orders of battle	____%	____
16.	Physical security	____%	____
17.	Tactical plots	____%	____
18.	Other intelligence outputs to be added:		
	a. ________________________	____%	
	b. ________________________	____%	
	c. ________________________	____%	
	d. ________________________	____%	
	e. ________________________	____%	
19.	Non-intelligence related outputs	____%	
		100%	

Comments: ____

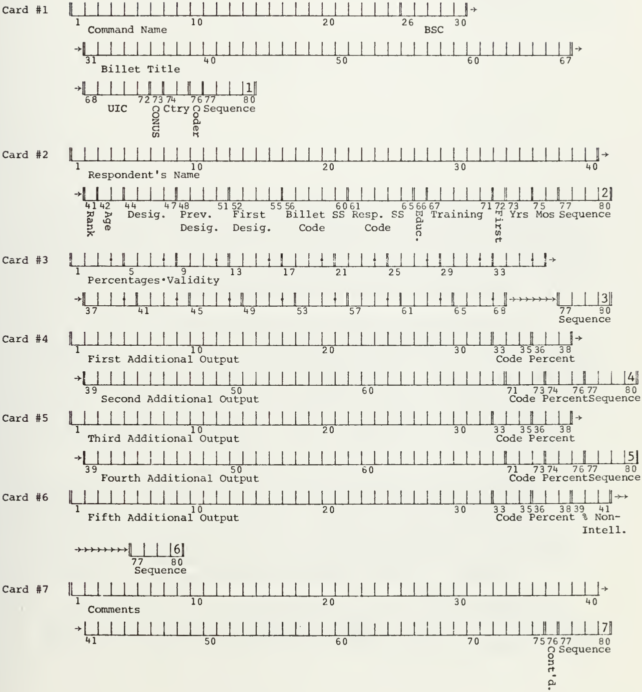
APPENDIX B

SAMPLE B

DELPHI "A" CODING FORM

NAVAL INTELLIGENCE TASK ANALYSIS GROUP

CODING FORM FOR FIRST QUESTIONNAIRE



APPENDIX B

SAMPLE C

17 DECEMBER 1974 DELPHI "B" QUESTIONNAIRE

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA - 93940

IN REPLY REFER TO:
NC4(382)/bh
1211
17 December 1974

1. This is the third phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. The purpose of this portion of the analysis is to determine the current and changing educational requirements of naval intelligence. This Delphi Questionnaire, like those in the past, is designed to take a minimum amount of your time. Your continued support is greatly appreciated.

2. A total of 102 personal interviews was conducted in Washington, Norfolk, and Hawaii. The primary purpose of these interviews was to establish initial educational requirement criteria. After every interview the researcher assigned a number to each applicable subject area. That number (1, 2, 3, or 4) corresponded to the level of understanding which the billet holder indicated he used or needed to carry out his assigned duties (TABLE I). The first four columns of TABLE II contain the interview results expressed in percentages.

3. The information which we ask you to provide below will expand our original interview data and will make it more meaningful. We request information from three different viewpoints: the educational areas and levels which you *presently use* in your billet, the areas and levels which you feel would enable you to do a more thorough job (*need*), and finally an estimate of the areas and levels which will be appropriate approximately ten years from now (*future*).

4. We request that you complete the last three columns of TABLE II as they apply to your billet. Use the educational level rating system provided in TABLE I (1, 2, 3, or 4). Mark the first column (labeled "*Use*") to indicate the level of the

subjects presently *Used* in the performance of your duties. Use the next column (labeled "*Need*") to indicate the level *Needed* for optimum job performance. Use the final column (labeled "*Future*") to provide an estimate of the educational levels which will be required by your billet approximately ten years from now.

5. If you are no longer in the billet first surveyed, please respond as though you were, since your experience in that billet is what we want to draw on for the completion of this project. Thank you for your time and patience.

R. W. Chapin

R. W. CHAPIN
By direction

TABLE I

EDUCATIONAL LEVEL RATING SYSTEM

"4" = Theoretical and Expert Capability

Possess knowledge which allows one to conceptualize and execute the steps required to provide solutions.

"3" = Working Knowledge

Be sufficiently familiar to be able to communicate effectively with an expert regarding both a problem and a solution; not necessarily able to actually work a complex problem without supervision and outside assistance.

"2" = Basic Knowledge

Have general acquaintance with major concepts, capabilities, and limitations.

"1" = Not Used or Not Needed

TABLE II

EDUCATIONAL REQUIREMENTS

None	Basic	Working	Expert			Use	Need	Future
% at each level (interview data)						Your Response		
1	2	3	4		Academic Area	U	N	F
52%	36%	10%	2%	Math	College Algebra			
73%	16%	9%	2%		Beginning Calculus			
84%	8%	6%	2%		Advanced Calculus			
66%	22%	9%	3%		Probability & Statistics			
89%	8%	3%	0%	Foreign Language				
37%	25%	32%	6%	Area Studies	USSR			
41%	26%	30%	3%		China			
53%	31%	16%	0%		Mid East			
65%	23%	12%	0%		Europe			
74%	18%	8%	0%		Latin America			
81%	14%	5%	0%		Africa			
50%	39%	11%	0%	Operations Analysis				
53%	27%	18%	2%	International Relations Theory				
46%	34%	18%	2%	Naval Science	Underwater Acoustics			
53%	29%	16%	2%		Sonar Systems			
34%	37%	26%	3%		Communication Systems			
46%	31%	20%	3%		Radar Systems			
61%	28%	10%	1%		Optics			
66%	24%	9%	1%		Lasers			
34%	34%	27%	5%		Collection Systems			
47%	29%	20%	4%	Nat'l Scrty	Threat/Net Assessment			
7%	21%	55%	17%		Nat'l Security/Intell Orgn.			
32%	16%	41%	11%	Soviet Forces	Soviet Naval			
40%	21%	34%	5%		Soviet Air Force			
45%	33%	20%	2%		Soviet Ground			
45%	29%	23%	3%		Soviet Strat. Rocket Troops			
40%	29%	24%	7%		Soviet Mer/Fish/Oceanographic			
46%	30%	18%	6%	Blue Forces	U.S. Naval Forces			
65%	20%	12%	3%		Other U.S. Forces			
47%	29%	23%	1%		Allied Capability			
32%	35%	28%	5%	ADP	System Design/Analysis (Mgmt)			
67%	12%	16%	5%		Hardware Operations			
65%	20%	12%	3%		Programming			
12%	50%	33%	5%		Basic Interface Operations			
62%	20%	14%	4%	Management	Management by Objectives			
33%	31%	30%	6%		Personnel			
36%	28%	29%	7%		Financial			
31%	39%	25%	5%		Nat'l/Naval Budget Process			
49%	32%	15%	4%		Labor Relations			
13%	25%	47%	15%	Comm. Skill	Briefing			
15%	28%	42%	15%		Writing			
31%	17%	37%	15%		Organization of Thought			

APPENDIX B

SAMPLE D

INTERVIEW SHEET AND DATA CODING FORM

Name ______________________ Command ______________ Date ________

Sequence # __________

Questionnaire?
a. What sort of educational background is required for that task/output?
b. What are the intellectual tools most used?
c. What would you liked to have studied?
d. If available, what sort of correspondence course would you take?
e. What sort of help do you need to call in?
f. Are you time limited in this task?
g. What is your most valuable educational experience (for this output)?
h. What sort of pubs do you use: textual, graphical, or technical?
i. Where does your output go (for each important one)?
j. In what form?

History; foreign language; mathematics; ops anal; int'l rel; nat'l security affairs; u/w acoustics; EE; general science; know. of USSR forces; ADP-system design/programming/sys. op; mgmt; forecasting; know. of US systems; speach; PPBS

synthesize; coord.; anal; compile; compute; copy; negotiate; instruct; supervise; persuade; speak; set up; op; in/out

1. Admin
2. Briefs
3. Budgets
4. A/V aids
5. CI
6. Data anal.
7. D.M.
8. Est.
9. OPORDs
10. Coll plans
11. Coll task.
12. IR's
13. Studies
14. ADP/comm
15. OB's
16. Security
17. Plots
18.a.
18.b.
18.c.
18.d.
18.e.
19. Billet in general

1. Whom do you spend the most time with during its performance?

2. What about his time; how is the rest of it spent?

3. Identify key billets in this organization.

4. Where in the output flow does this billet fall?

5. Describe your turnover.

6. What was the most difficult part of learning your new job?

7. Are you called in to help other desks? Personal or billet reasons?

General comments:

INTERVIEW DATA CODING FORM

CASE # ______
123

CODER ______
4

		56 7	8 level used	9 level needed
MATH	College Algebra	C1.1		
	Beginning Calculus	01.2		
	Probs & Stats	01.3		
	Adv. Calculus	01.4		
	Foreign Language	02.1		
AREA STUDIES	USSR	03.1		
	China	03.2		
	Mid East	03.3		
	Europe	03.4		
	Latin Amer.	03.5		
	Africa	03.6		
	Ops Anal.	04.1		
	Int'l Rel.	05.1		
NAVAL SCIENCE	U/W Acou.	06.1		
	Sonar Sys	06.2		
	Comm Sys	06.3		
	Radar Sys	06.4		
	Optics	06.5		
	Lasers	06.6		
	Collection Sys	06.7		
NAT'L SECURITY	Natl/Nav Budget Proc	07.1		
	Threat/Net Assessment	07.2		
	Natl Sec/Intell Orgn	07.3		
SOVIET FORCES	Naval	08.1		
	A.F.	08.2		
	Ground	08.3		
	PVO	08.4		
	SRT	08.5		
	Mer/Fish/Oceano	08.6		
BLUE FORCES	Collection Sys	C9.1		
	Naval Strat/G.P.	09.2		
	Other Strat/G.P.	09.3		
	Allied Capability	09.4		
ADP	Sys Design/Anal (Mgmt)	10.1		
	Hardware Opr.	10.2		
	Software Opr.(Programming)	10.3		
	Basic Interface Ops	10.4		
COMM SKILLS	Briefing	11.1		
	Writing	11.2		
	Organ. of Thought	11.3		
MANAGEMENT	Collection Sys	12.1		
	PERT	12.2		
	Mgmt by Obj	12.3		
	Personnel	12.4		
	Financial	12.5		
	Labor Relations	12.6		

APPENDIX B

SAMPLE E

EXAMPLES OF 6 NOVEMBER 1974
COMPUTER-PRINTED DELPHI "A2"
QUESTIONNAIRES

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 201
1211
6 NOV 1974

Director
Naval Ocean Surveillance
Information Center
4301 Suitland Road
Washington, D. C. 20390

Attn: LCDR Louis A. Rogers

Dear Lieutenant Commander Rogers:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and make corrections as necessary. Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NOSIC
BILLET SEQUENCE CODE: 19070
BILLET TITLE: HEAD, MARITIME OPERATIONS BRANCH
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 35
RESPONDENT'S DESIGNATOR HISTORY: 1110
BILLET SUBSPECIALTY CODE: 7210E
RESPONDENT'S SUBSPECIALTY CODE: 7210E

EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET:
DEFENSE INTELL SCHOOL
FIRST INTELLIGENCE BILLET? YES
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 00
MONTHS IN THIS BILLET: 21

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	020%
2. Briefs and Debriefs	78%	9%	003%
3. Budgets and Budgeting	54%	6%	-%
4. Charts/Audio/Visual Aids	50%	5%	-%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	005%
7. Decisions and Recommendations	86%	17%	020%
8. Estimates	45%	9%	010%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	-%
11. Intelligence Collection			

	Tasking	43%	7%	-%
12.	Intelligence Information Reports	37%	7%	-%
13.	Intelligence Studies	53%	10%	002%
14.	Interface with ADP/ Telecommunications	53%	12%	010%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	002%
17.	Tactical Plots	23%	5%	-%
**INTELLIGENCE OUTPUTS ADDED:				
COUNSELING SUBORDINATES				003%
ESTABLISHING REQUIREMENTS				005%
INTER AGENCY LIAISON				005%
OUTGOING REPORTS				015%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

We ask you reconsider the write-in outputs which you added to our original list. We request that you break them down into basic elements. For example, your output COUNSELING SUBORDINATES might be broken down to counseling/training.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 208
1211
6 NOV 1974

Commanding Officer
Naval Intelligence Support Center
4301 Suitland Road
Washington, D. C. 20390

Attn: CAPT Edwin L. Herring

Dear Captain Herring:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and make corrections as necessary. Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NISC SUITLAND
BILLET SEQUENCE CODE: 00145
BILLET TITLE: HEAD, ADMIN DEPARTMENT
RESPONDENT'S RANK: CAPTAIN
RESPONDENT'S AGE: 44
RESPONDENT'S DESIGNATOR HISTORY: 1110
BILLET SUBSPECIALTY CODE: NONE
RESPONDENT'S SUBSPECIALTY CODE: 7210E
EDUCATIONAL LEVEL: BACHELORS LEVEL

TRAINING USED IN THIS BILLET:
DEFENSE INTELL SCHOOL
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 07
MONTHS IN THIS BILLET: 09

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

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4. Charts/Audio/Visual Aids	50%	5%	-%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	013%
7. Decisions and Recommendations	86%	17%	050%
8. Estimates	45%	9%	none
9. Intelligence Annexes to OPORDs	26%	5%	none
10. Intelligence Collection Plans	35%	6%	none
11. Intelligence Collection Tasking	43%	7%	none

12.	Intelligence Information Reports	37%	7%	none
13.	Intelligence Studies	53%	10%	none
14.	Interface with ADP/ Telecommunications	53%	12%	002%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	005%
17.	Tactical Plots	23%	5%	-%
**INTELLIGENCE OUTPUTS ADDED:				
PERSONNEL SECURITY				005%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

We ask you reconsider the write-in output which you added to our original list. We request that you break it down into basic elements. For example, your output PERSONNEL SECURITY might be broken down to administration of intelligence office, physical security, and counseling/training.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 212
1211
6 NOV 1974

Commanding Officer
Naval Intelligence Support Center
4301 Suitland Road
Washington, D. C. 20390

Attn: CDR William M. Russ, Jr.

Dear Commander Russ:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and make corrections as necessary. We would also like for you to indicate if you are a NIS/DIS graduate: YES___, NO___? Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NISC HOFFMAN
BILLET SEQUENCE CODE: 00500
BILLET TITLE: HEAD, ELECTROMAGNETIC SYSTEMS DEPT
RESPONDENT'S RANK: COMMANDER
RESPONDENT'S AGE: 40
RESPONDENT'S DESIGNATOR HISTORY: 1120 1100
BILLET SUBSPECIALTY CODE: 72109

RESPONDENT'S SUBSPECIALTY CODE: 7210S
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: NONE LISTED
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 02
MONTHS IN THIS BILLET: 16

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	045%
2. Briefs and Debriefs	78%	9%	015%
3. Budgets and Budgeting	54%	6%	015%
4. Charts/Audio/Visual Aids	50%	5%	-%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	-%
7. Decisions and Recommendations	86%	17%	020%
8. Estimates	45%	9%	-%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	-%
11. Intelligence Collection			

	Tasking	43%	7%	-%
12.	Intelligence Information Reports	37%	7%	-%
13.	Intelligence Studies	53%	10%	-%
14.	Interface with ADP/ Telecommunications	53%	12%	-%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	-%
17.	Tactical Plots	23%	5%	-%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA 93940

NC4(382)/TA 215
1211
6 NOV 1974

Commanding Officer
Naval Intelligence Support Center
4301 Suitland Road
Washington, D. C. 20390

Attn: LCDR David A. Cotner

Dear Lieutenant Commander Cotner:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and make corrections as necessary. We would also like for you to indicate if you are a NIS/DIS graduate: YES____, NO____? Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NISC HOFFMAN
BILLET SEQUENCE CODE: 00505
BILLET TITLE: HEAD PRODUCTION MANAGEMENT DIVISION
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 35
RESPONDENT'S DESIGNATOR HISTORY: 1320
BILLET SUBSPECIALTY CODE: 7210E

RESPONDENT'S SUBSPECIALTY CODE: 7210S
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET:
OTHER TRAINING E.G. FAAWTCs/DESSCHOOL
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 06
MONTHS IN THIS BILLET: 15

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	015%
2. Briefs and Debriefs	78%	9%	002%
3. Budgets and Budgeting	54%	6%	001%
4. Charts/Audio/Visual Aids	50%	5%	005%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	-%
7. Decisions and Recommendations	86%	17%	008%
8. Estimates	45%	9%	005%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	002%
11. Intelligence Collection			

	Tasking	43%	7%	003%
12.	Intelligence Information Reports	37%	7%	003%
13.	Intelligence Studies	53%	10%	030%
14.	Interface with ADP/ Telecommunications	53%	12%	001%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	005%
17.	Tactical Plots	23%	5%	-%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

New list Of Outputs		Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 219
1211
6 NOV 1974

Commanding Officer
Naval Intelligence Support Center
4301 Suitland Road
Washington, D. C. 20390

Attn: LCDR David H. Krieger

Dear Lieutenant Commander Krieger:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and make corrections as necessary. Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NISC SUITLAND
BILLET SEQUENCE CODE: 00200
BILLET TITLE: HEAD, ASW APPLICATIONS DIV
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 31
RESPONDENT'S DESIGNATOR HISTORY: 1120
BILLET SUBSPECIALTY CODE: NONE
RESPONDENT'S SUBSPECIALTY CODE: NONE
EDUCATIONAL LEVEL: BACHELORS LEVEL

TRAINING USED IN THIS BILLET:
DEFENSE INTELL SCHOOL
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 05
MONTHS IN THIS BILLET: 02

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	020%
2. Briefs and Debriefs	78%	9%	010%
3. Budgets and Budgeting	54%	6%	001%
4. Charts/Audio/Visual Aids	50%	5%	001%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	015%
7. Decisions and Recommendations	86%	17%	020%
8. Estimates	45%	9%	020%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	-%
11. Intelligence Collection Tasking	43%	7%	002%

12.	Intelligence Information Reports	37%	7%	001%
13.	Intelligence Studies	53%	10%	003%
14.	Interface with ADP/ Telecommunications	53%	12%	001%
15.	Orders of Battle	30%	5%	002%
16.	Physical Security	54%	4%	002%
17.	Tactical Plots	23%	5%	002%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 223
1211
6 NOV 1974

Commanding Officer
Naval Intelligence Processing
System Support Activity
2461 Eisenhower Avenue
Alexandria, Virginia 22331

Attn: LCDR John S. Lierman

Dear Lieutenant Commander Lierman:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and make corrections as necessary. Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NIPSSA HOFFMAN
BILLET SEQUENCE CODE: 00400
BILLET TITLE: IDHS PLANNING + MGMT DIVISION HEAD
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 36
RESPONDENT'S DESIGNATOR HISTORY: 1630
BILLET SUBSPECIALTY CODE: 9210P
RESPONDENT'S SUBSPECIALTY CODE: 7210P

EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET:
· DEFENSE INTELL SCHOOL
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 12
MONTHS IN THIS BILLET: 13

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

	ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1.	Administration of Intelligence Office	85%	22%	005%
2.	Briefs and Debriefs	78%	9%	005%
3.	Budgets and Budgeting	54%	6%	-%
4.	Charts/Audio/Visual Aids	50%	5%	-%
5.	Counterintelligence Studies	16%	5%	-%
6.	Data Analysis	59%	15%	025%
7.	Decisions and Recommendations	86%	17%	-%
8.	Estimates	45%	9%	-%
9.	Intelligence Annexes to OPORDs	26%	5%	-%
10.	Intelligence Collection Plans	35%	6%	-%
11.	Intelligence Collection			

	Tasking	43%	7%	-%
12.	Intelligence Information Reports	37%	7%	-%
13.	Intelligence Studies	53%	10%	-%
14.	Interface with ADP/ Telecommunications	53%	12%	025%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	-%
17.	Tactical Plots	23%	5%	-%
**INTELLIGENCE OUTPUTS ADDED:				
IDHS RESOURCE MANAGEMENT				020%
IDHS PLANS AND MANAGEMENT				020%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

We ask you reconsider the write-in outputs which you added to our original list. We request that you break them down into basic elements. For example, your output IDHS RESOURCE MANAGEMENT might be broken down to resource/organizational management, liaison, and interface with ADP/telecommunications.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 402
1211
6 NOV 1974

Commander
Naval Intelligence Command
Naval Intelligence Command Hqtrs
2461 Eisenhower Avenue
Alexandria, Virginia 22331

Attn: LCDR Vincent H. De Vito

Dear Lieutenant Commander De Vito:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and provide: billet subspecialty code. We would also like for you to indicate if you are a NIS/DIS graduate: YES____, NO____? Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: COMNAVINTCOM
BILLET SEQUENCE CODE: 50250
BILLET TITLE: HEAD SPECIAL SEC DET PENTAGON BRANCH
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 43
RESPONDENT'S DESIGNATOR HISTORY: 1110 1100 1108

BILLET SUBSPECIALTY CODE: ?
RESPONDENT'S SUBSPECIALTY CODE: 7210E
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET:
PREV INTELL EXPERIENCE
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 03
MONTHS IN THIS BILLET: 60

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	030%
2. Briefs and Debriefs	78%	9%	030%
3. Budgets and Budgeting	54%	6%	-%
4. Charts/Audio/Visual Aids	50%	5%	-%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	-%
7. Decisions and Recommendations	86%	17%	005%
8. Estimates	45%	9%	-%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	-%

11.	Intelligence Collection Tasking	43%	7%	-%
12.	Intelligence Information Reports	37%	7%	-%
13.	Intelligence Studies	53%	10%	-%
14.	Interface with ADP/ Telecommunications	53%	12%	-%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	035%
17.	Tactical Plots	23%	5%	-%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 404
1211
6 NOV 1974

Commanding Officer
Naval Investigative
Service Headquarters
2461 Eisenhower Avenue
Alexandria, Virginia 22314

Attn: LCDR Thomas E. Leach

Dear Lieutenant Commander Leach:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and provide: billet subspecialty code, your subspecialty code. We would also like for you to indicate if you are a NIS/DIS graduate: YES____, NO____? Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NISHQ
BILLET SEQUENCE CODE: 00300
BILLET TITLE: COUNTER INTELLIGENCE ANALYST
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 37
RESPONDENT'S DESIGNATOR HISTORY: 1630 1355

BILLET SUBSPECIALTY CODE: ?
RESPONDENT'S SUBSPECIALTY CODE: ?
EDUCATIONAL LEVEL: LESS THAN BACHELORS DEGREE
TRAINING USED IN THIS BILLET: NONE LISTED
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 07
MONTHS IN THIS BILLET: 11

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	010%
2. Briefs and Debriefs	78%	9%	005%
3. Budgets and Budgeting	54%	6%	002%
4. Charts/Audio/Visual Aids	50%	5%	002%
5. Counterintelligence Studies	16%	5%	055%
6. Data Analysis	59%	15%	-%
7. Decisions and Recommendations	86%	17%	010%
8. Estimates	45%	9%	-%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	-%
11. Intelligence Collection			

	Tasking	43%	7%	001%
12.	Intelligence Information Reports	37%	7%	-%
13.	Intelligence Studies	53%	10%	-%
14.	Interface with ADP/ Telecommunications	53%	12%	-%
15.	Orders of Battle	30%	5%	-%
16.	Physical Security	54%	4%	005%
17.	Tactical Plots	23%	5%	-%
**INTELLIGENCE OUTPUTS ADDED:				
STAFF SUPPORT				010%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

We ask you reconsider the write-in output which you added to our original list. We request that you break it down into basic elements. For example, your output STAFF SUPPORT might be broken down to resource/organizational management, charts and audio-visual aids, and data analysis.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
2.	Resource/Organizational Management	___%
3.	Budgeting and Fiscal Planning	___%
4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA 93940

NC4(382)/TA 410
1211
6 NOV 1974

Officer in Charge
Navy Field Operational
Intelligence Office
Fort George G. Meade
Maryland 20755

Attn: LCDR Paul R. Borcik

Dear Lieutenant Commander Borcik:

This is the second phase of the naval intelligence community task analysis being conducted at the Naval Postgraduate School. We appreciate your response to our first questionnaire. We would now like to provide you with a little feedback.

The instrument we are using this time is constructed as a part of a "Delphi" technique. In light of the overall community's answers to our first questionnaire, we will ask you to re-evaluate your original responses (which have been listed for you in TABLE II). While not attempting to move the various time allocations toward a consensus, the Delphi will help us arrive at a consensus of the entire community's outputs and should help validate our data base.

The next phase will apply our Washington, Norfolk, and Pearl interview data to the question of educational requirements in the community. First, however, we need your help in this phase. Incidentally, if you are no longer in the billet originally canvassed, please respond as though you were, and include the name of your relief.

The following is set up to take no more than ten minutes of your time. We would appreciate your continued participation.

TABLE I is our coded version of the background information you provided in response to our initial questionnaire. Please check it for accuracy and provide: billet sequence code, billet subspecialty code, your subspecialty code. We would also like for you to indicate if you are a NIS/DIS graduate: YES____, NO____? Please make all corrections and additions directly on this letter.

TABLE I

COMMAND NAME: NFOIO
BILLET SEQUENCE CODE: ?
BILLET TITLE: PANEL HD SOV COMM CONTROL SOV OCESURV
RESPONDENT'S RANK: LIEUTENANT COMMANDER
RESPONDENT'S AGE: 32
RESPONDENT'S DESIGNATOR HISTORY: 1630 1105

BILLET SUBSPECIALTY CODE: ?
RESPONDENT'S SUBSPECIALTY CODE: ?
EDUCATIONAL LEVEL: POSTGRADUATE STUDIES
TRAINING USED IN THIS BILLET: NONE LISTED
FIRST INTELLIGENCE BILLET? NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 04
MONTHS IN THIS BILLET: 07

In the first column below is our original list of intelligence outputs. As you remember, we asked you to indicate the percentage of time which you devote to each of these outputs. The following data were compiled from the information provided by the 321 respondents to the first questionnaire. In the second column of TABLE II is the percentage of respondents who indicated that the output was applicable to their jobs. The third column contains the mean percentage of time engaged in that output by those considering the output applicable. The fourth column lists your responses to the first questionnaire.

TABLE II

ORIGINAL LIST OF OUTPUTS	PERCENT THOSE REPORTING OUTPUT	MEAN FOR BILLETS INVOLVED WITH OUTPUT	YOUR RESPONSE
1. Administration of Intelligence Office	85%	22%	005%
2. Briefs and Debriefs	78%	9%	020%
3. Budgets and Budgeting	54%	6%	001%
4. Charts/Audio/Visual Aids	50%	5%	005%
5. Counterintelligence Studies	16%	5%	-%
6. Data Analysis	59%	15%	038%
7. Decisions and Recommendations	86%	17%	010%
8. Estimates	45%	9%	010%
9. Intelligence Annexes to OPORDs	26%	5%	-%
10. Intelligence Collection Plans	35%	6%	-%
11. Intelligence Collection			

Tasking	43%	7%	001%
12. Intelligence Information Reports	37%	7%	-%
13. Intelligence Studies	53%	10%	005%
14. Interface with ADP/ Telecommunications	53%	12%	003%
15. Orders of Battle	30%	5%	-%
16. Physical Security	54%	4%	001%
17. Tactical Plots	23%	5%	-%

In light of the responses to our first questionnaire and the interviews, we have modified the output list significantly. Using this revised list of outputs (below), please provide revised percentages in the spaces provided.

Careful consideration has been given to the need for classifying your response and the aggregate data which will result. The questions involved in this questionnaire are deemed sufficiently general in nature to preclude the necessity for classifying your answers. If you judge otherwise, then follow standard procedures in classifying and returning the questionnaire. Please return this questionnaire in the attached self-addressed envelope.

TABLE III

	New list Of Outputs	Revised Percentages
1.	Administration of Intelligence Office	___%
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4.	Decisions and Recommendations	___%
5.	Briefs and Debriefs	___%
6.	Liaison	___%
7.	Charts and Audio-Visual Aids	___%
8.	Counterintelligence Studies	___%
9.	Data Analysis	___%
10.	Estimates	___%
11.	Intelligence Annexes to OPORDs	___%
12.	Intelligence Collection Plans	___%
13.	Intelligence Collection Tasking	___%
14.	Intelligence Information Reports	___%
15.	Interface with ADP/Telecommunications	___%
16.	Orders of Battle	___%
17.	Physical Security	___%
18.	Tactical Plots	___%
19.	Non-Intelligence Related Outputs	___%
20.	Counseling/Training	_______%
		100%

R. W. CHAPIN, Jr.
LCDR. USN
By direction
Coordinator, Task
Analysis Group (382)

APPENDIX C

USER'S MANUAL AND TPS GUIDE

The complete INTELL data file is permanently retained on tape storage. This file was created by SPSS's "SAVE FILE" instruction. Additionally, the original INTELL data declaration statements and the QID12CDS files (from which the INTELL file was created) each were stored on punched cards for secondary back-up. Both card files and the tape file were placed in the custody of the Naval Intelligence Curricular Officer (Code 382), Naval Postgraduate School, Monterey, California 93940.

The SPSS declaration cards file was approximately 960 cards and included all format statements, missing value statements, variable labels, and value labels, etc. The declaration statements are essentially those listed in Appendix F Sample O [only a few cosmetic changes and the change in the file name from INTELLD to INTELL differ]. The QID12CDS was the sequential file of twelve cards for each of the 325 cases [3900 cards total] which contained the August 1974 questionnaire and DELPHI "A1" [first seven cards], the September interview data [next two cards], the November DELPHI "A2" data [next card], and the December DELPHI "B" data [last two cards]. The QID12CDS file is listed in Appendix H.

Occasional access to this data, when authorized, would best be by use of the tape file. More frequent access would

be expedited by transfering that file to disk storage, space permitting. Nominal core storage requirements for this SPSS file was 204K bytes. At best, this core storage requirement allowed "CLASS F" execution priority.

The remainder of this appendix documents those steps required to: (1) retrieve the variable labels and the value label information from the SPSS file, (2) access the existing INTELL data base file from tape storage, (3) transfer the data file from tape storage to disk storage, and (4) regenerate the INTELL data file on tape or disk storage from the QID12CDS file. These instructions are necessarily limited in scope to an outline of the basic steps required to accomplish the above four functions, and apply specifically to the computer center at the Naval Postgraduate School. Additionally, a description of the TEXT PROCESSING SYSTEM has been included, as "TPS" played an important part in the project computerization.

1. <u>To retrieve the variable labels and value label data</u>.

Two methods may be employed to acquire a complete list of the variables declared in the SPSS file. The INTELL data tape must be checked-in at the dispatch desk in the computer center prior to executing these programs in order to retrieve this information.

The first method produces the more readable sequential list of variable numbers with only the variable description printed in the format very similar to those cards used in the SPSS "VAR LABELS" statement. The "DUMP" control card is used

to print this information which was recorded in the "DOCUMENT" file on the data tape [one of the cosmetic changes made in the last data set]. The following JCL and SPSS control cards will produce this listing:

```
//---STANDARD JOB CARD HERE---
// EXEC SPSS,REGION=250K
//FT03F001 DD UNIT=2400,DISP=(OLD,KEEP),VOL=SER=INTELL,
//   DSNAME=INTELL,LABEL=(1,SL),DCB=DLKSIZE=2012
//SYSIN DD *
GET FILE        INTELL
DUMP            DOCUMENT
FINISH
/*
```

The second method also uses the SPSS "DUMP" control statement, but provides the sequential variable labels with "VALUE LABELS" information interspersed with each variable declaration. The following JCL and SPSS control cards will produce such a listing:

```
//---STANDARD JOB CARD HERE---
// EXEC SPSS,REGION=250K
//FT03F001 DD UNIT=2400,DISP=(OLD,KEEP),VOL=SER=INTELL,
//   DSNAME=INTELL,LABEL=(1,SL),DCB=BLKSIZE=2012
//SYSIN DD *
GET FILE        INTELL
DUMP            LABELS
FINISH
/*
```

2. Accessing the INTELL tape file.

The following JCL and SPSS control cards in general access the INTELL data file from tape storage. Once the file has been retrieved by the "GET FILE" control statement, any valid SPSS control statement(s) may be executed.

```
//---STANDARD JOB CARD HERE---
// EXEC SPSS,REGION=250K
//FT03F001 DD UNIT=2400,DISP=(OLD,KEEP),VOL=SER=INTELL,
//  DSNAME=INTELL,LABEL=(1,SL),DCB=BLKSIZE=2012
//SYSIN DD *
RUN NAME        ANY TITLE DESIRED
GET FILE        INTELL
any standard SPSS control statement (s) go here
FINISH
/*
```

3. Tape to disk data file transfer.

The following JCL and SPSS control cards allow access to the existing data file from tape storage and define an output file on the public disk which has been name "MARY". The programmer must check with the dispatch clerk prior to executing this program to verify that sufficient storage space exists on the disk unit selected. SPSS data storage procedures are used to "SAVE FILE".

```
//---STANDARD JOB CARD HERE---
// EXEC SPSS,REGION=250K
//FT03F001 DD UNIT=2400,DISP=(OLD,KEEP),VOL=SER=INTELL,
//  DSNAME=INTELL,LABEL=(1,SL),DCB=BLKSIZE=2012
//FT04F001 DD UNIT=2314,VOL=SER=MARY,DSNAME=INTELL,
//  LABEL=RETPD=30,DCB=BLKSIZE=3624,DISP=(NEW,KEEP),
//  SPACE=(TRK,(160,5),RLSE)
//SYSIN DD *
RUN NAME       ANY TITLE DESIRED
GET FILE       INTELL
at least one valid executable SPSS control statement must be
included here (a CONDESCRIPTIVE is used as an example):
CONDESCRIPTIVE VAR008
STATISTICS     ALL
FILE NAME      INTELL
SAVE FILE
FINISH
/*
```

In addition to verifying the existence of sufficient disk storage space on the unite desired, the programmer should also insure that the label "INTELL" which was used in the FT04F001 data definition statement is acceptable at the computer center. There are file naming conventions which may apply to this new data set.

4. Regeneration of the INTELL data set.

Assuming that there may exist a future need to recreate the INTELL tape file or to create another storage device file directly from the SPSS and raw data card files, the necessary data files were arranged to allow such a geneneration process. In addition to the following JCL cards, the SPSS declaration deck [approximately 960 cards] and the raw data deck [the QID12CDS file of 3900 cards] are required. The programmer should check with the dispatch clerk in the computer center concerning the availability of storage space on any of the mass storage units. It should be noted that the Model 2321 Data Cell cannot be used because of the requisite block size used in SPSS files.

Two different JCL card sets are listed. The first deck should be used to recreate the INTELL file on tape storage. The second JCL deck should be used to create the INTELL file on disk.

```
//---STANDARD JOB CARD HERE---,TIME=4
// EXEC SPSS,REGION=250K
//FT04F001 DD UNIT=2400,DISP=(NEW,KEEP),VOL=SER=INTELL,
//  DSNAME=INTELL,LABEL=(1,SL),DCB=BLKSIZE=2012
//SYSIN DD *
```

The SPSS declaration deck up to and including the "READ INPUT DATA" control statement goes here.

```
READ INPUT DATA
```

The QID12CDS card file [the 3900 cards for input data] goes here.

```
SAVE FILE
FINISH
/*
```

or for storage on the 2314 disk named "MARY":

```
//---STANDARD JOB CARD HERE---,TIME=4
// EXEC SPSS,REGION=250K
//FT04F001 DD UNIT=2314,DISP=(NEW,KEEP),VOL=SER=MARY,
//   DSNAME=INTELL,LABEL=RETPD=30,DCB=BLKSIZE=3624,
//   SPACE=(TRK,(160,5),RLSE)
//SYSIN DD *
```

The SPSS declaration deck up to and including the "READ INPUT DATA" control statement goes here.

```
READ INPUT DATA
```

The QID12CDS card file [the 3900 cards for input data] goes here.

```
SAVE FILE
FINISH
/*
```

TPS, A TEXT PROCESSING SYSTEM

TPS attempts to provide a readily available text processing system which is efficient to use, in terms of both the preparation of input and the computer resources demanded. This document was prepared with the aid of TPS.

TPS is a program which runs on the IBM 360 under the OS/MVT operating system. TPS provides the user with a great variety of commands which allow total control over text placement on the output page, as well as many services which aid the user in the preparation of indices, tables, indentation level control, equations, etc.

Input Conventions

In its simplest form, TPS requires user knowledge of three "commands":

-PG Print the rest of the current line buffer and skip to the top of the next page.

-PP Print the current line buffer and begin a new paragraph, skipping and indenting.

/ "Capitalize" the letter which follows.

Let us consider a simple example of keypunched input which illustrates these rules:

```
*************************************************************
 -PG-PP/THIS IS A SIMPLE EXAMPLE OF
COMMAND USAGE IN /T/P/S.  /IT WILL RESULT
IN THE TWO PARAGRAPHS WHICH FOLLOW.
```

-PP/A NEW PARAGRAPH FOR THE EXAMPLE.

This is a simple example of command usage in TPS. It will result in the two paragraphs which follow.

A new paragraph for the example.
****

Example 1

In Example 1, the card input did not fill all 80 columns of the card. Note that all the blanks between the last word of card 1 (OF) and the first word of card 2 (COMMAND) have been compressed to a single space in the output. This "blank squeezing" will always occur unless commands are given to suppress it.

Since few keypunchers (or typists, for that matter) can produce perfect output, a correction feature is provided in TPS. It gives you a simple way to correct errors as you punch cards. It won't solve all your problems, but it can save you a lot of card duplication. If you discover that you have made an error, you can delete characters in error by punching the "¢" character. Thus AM¢ND is equivalent to AND, and TJIS¢¢¢HAT is THAT. You may not use the "¢" to correct errors on the previous card, however.

<u>Output</u>

You have probably been wondering how to get upper and lower case output. To do so requires a special print train (the TN train) to be installed in one of the high-speed line printers. This interrupts normal service, and is therefore generally available only once per day (in the very early morning). Two output classes have been established for TN output: SYSOUT=M is printed on regular lined paper and SYSOUT=N is printed on unlined bond.

Since the TN train has numerous "special" characters for which the keypunch has no keys, their use is made possible by "capitalizing" available characters, e.g., /+ is ± and /= is ≠. A list of the upper/lower case character relations is given below.

```
 ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789
 abcdefghijklmnopqrstuvwxyz0123456789
¤┘┌•-@°■{/±└)+–┼}≤≥┐[⁻]≠!(   UPPER CASE
#,$.-@%*</+_)≠|&>:;¬'?"=!(   lower case
```

A typical user produces several draft versions of his document before the final copy is ready. These draft versions of TPS output may be printed with the normal printer (PN train, SYSOUT=A) for draft review. You can proofread your text without waiting for the overnight turnaround of the TN output.

<u>Running TPS</u>

To run TPS, the following JCL is needed:

```
// EXEC PGM=TPS
//STEPLIB DD DSN=F0132.L,DISP=SHR,UNIT=2314,VOL=SER=LINDA
//SYSPRINT DD SYSOUT=A
//SYSIN DD *
```

This deck will produce upper case debug output. All characters will be single struck. After the content and general form of your text appear to be satisfactory, additional proofing facilities can be obtained by specifying

```
// EXEC PGM=TPS,PARM='D'
```

when running TPS. This will cause TPS to overstrike capital letters, while lower case letters will be single struck. Note that overstriking causes three times as much work for the printer, since each line must be printed three times.

If upper/lower case output is required, then use:

```
// EXEC PGM=TPS,PARM='TN'
```

and change the output class to

```
//SYSPRINT DD SYSOUT=M
```

for output on lined printer paper; or,

```
//SYSPRINT DD SYSOUT=N
```

for output on bond paper. Note that bond output should be used only for the final run since it is considerably more expensive than regular printer paper.

Keypunching Services

The normal keypunching servies of the W. R. Church Computer Center are available for TPS users. Please note, however, that keypunch jobs must consist of 40 or fewer pages of text. Standard first in, first out service will be given to a user's first TPS keypunch job submitted each day; time-available punching will be done on any TPS keypunch requests in excess of the 40 page limit. No priority keypunching service is available for TPS users.

A General Overview of TPS Facilities

TPS provides control over many different aspects of text placement. Expressed in general categories, they are:

- line control: centering and justification
- margin control: indentation, left and right margins
- dump and skip: line dump, paragraphing, paging, skips
- page numbering: mode and location of page numbers
- revision flagging: documentation aids
- indexing: index and table of contents generation
- formulas: superscript and subscript aids
- macros: textual substitution with parameters
- debugging: TPS aids
- basic functions: commands having local effect
- global control: global functions

Command definitions have been grouped according to the above divisions. An alphabetical listing of commands is given in the Index.

Default values of control settings are shown in Appendix I. Additional PARM values are defined in Appendix II.

****

line control

****

Line control action is initiated at the time the line buffer is dumped. Thus, only the last line control command given is followed.

-CN CeNter lines

Center between the right and left margin all lines printed after the execution of this command including any lines in an incomplete state. The margins used are those which were set at the time the lines group in progress was begun. Centering assumes that the line initially started at the left margin.

-EM Even Margins

Simultaneously right and left justify, by inserting extra blanks between words, all text found between the right and left margins. The direction of blank insertions is switched before each line is generated to balance the overall page print density. Text not between the left and right margins is unaffected by justification.

-LJ Left Justify

Left justify all line groups (lines are left unchanged in the line group buffers). Before special justification techniques are applied all lines have this format before printing.

-RJ Right Justify

Right justify all lines following the execution of this

command.

****

margin control

****

Three commands are provided for setting margins. The number which is a part of each command refers to the position in the print line: 001 is the leftmost print position; 132 is the rightmost. Default values for these parameters are shown in Appendix I.

-ISnnn Indentation Set

Set the paragraph indentation to "nnn". If it is equal to the left margin, one blank line is inserted before a paragraph conforming to standard block paragraphing conventions.

-LMnnn Left Margin set

Set the left margin to "nnn". This is not in effect until the current line group is dumped.

-RMnnn Right Margin set

Set the right margin to "nnn". As in -LM this command is not in effect until the current line group is dumped.

****

dump and skip

****

TPS produces up to 5 line buffers for each printed line. These are collectively known as the line group, and consist of the main line and optionally the overprint, the bold face, the superscript, and the subscript lines. The printing (dumping) of the line group is implicitly forced whenever the accumulated text in the buffer extends beyond the right margin. Explicit control of dumping and skipping is obtained

with the following commands.

-DB Dump line group Buffer

Dump all text found in the line buffers observing all line justification conventions, with the exception of even margins; normal carriage control is taken. If the line buffers are empty, no print action is taken. the line output pointer is subsequently set to the left margin constant.

-DE Dump buffer allowing Even margins

Dump all text found in the line buffers in exactly the same manner as the -DB except that the Even Margin option, if set, is observed. This command might be useful if an absolute tab or new paragraph command was used for setting up marginal notes while text between the margins is required to be right and left justified in order to blend with the rest of the text.

-PG New PaGe

Dump the last line group, start a new page, and establish a new header displacement. Top of page numbering, if requested, is performed automatically. No action is taken if already at top of page.

-PP New ParagraPh

Dump the line buffers as in a -DB. The output position is set to the paragraph indentation constant. If the paragraph indentation is equal to the left margin or if -CC0 (single space, special option) has been specified, an extra normal carriage control is performed.

-PSnnn Conditional Page Skip

Dump the current line buffer and then skip to the next page if "nnn" times the current carriage control value (i.e., nnn*2 if -CC2) LINES ARE NOT AVAILABLE. ON THE

CURRENT PAGE.

-SKnnn SKip lines over page boundaries

Dump the line buffers, including carriage control, and insert "nnn" lines without regard to page boundaries.

-SPnnn Skip lines or new Page

Dump line buffers including carriage control and insert "nnn" lines. If the skip goes over a page boundary skipping stops at the top of the next page after header spacing.

****

page numbering

****

Page numbers are automatically generated and printed at the bottom of each standard page (see -PB). If bottom numbering is not desired, other forms may be selected from the following list.

-ALnnn Absolute Left Margin

Set the absolute left margin to value "nnn". The absolute margins are used to compute page number locations.

-ARnnn Absolute Right margin

Define the right absolute margin for page numbering. It's initial value is equal to the default right margin. See also -AL.

-PBnnn Page number at the Bottom of the page

Generate the page number "nnn" centered between the absolute left and right margins three lines below the last printable line on the page as specified by the -BD command. See also -PN.

-PNnnn top of Page Numbering

Generate the current page as "nnn" right justified on the first printable line of a page, before header spacing is taken. Since TPS generates output one line at a time this form of page numbering will not be able to set a proper page number until the next page is started. Page numbers are incremented automatically. If "nnn" is equal to "***" then page numbering will be suppressed.

-PR Page number in Roman

Generate the current page number as a centered lower case Roman number at the bottom of the current page. The value of the page number to be used is set with a PB or PN command. The current page number may be reset with a -PB OR -PN COMMAND.

-P# Print the current page number

The value of the current page number will be printed whenever this command is encountered. Special control over page number placement can be achieved by combining this command with "ON" conditions.

-P+nnn Add "nnn" to the current page number

The contents of the current page number are incremented by "nnn"

-P-nnn Subtract "nnn" from the current page number

The contents of the current page number are decremented by "nnn".

****

revision flagging

****

These commands provide a mechanism for flagging text changes. The revision character is placed on the output line 4 spaces to the right of the current absolute right margin. |

-RB Revision Begin

This command flags the beginning of revised text. All text following this command will be flagged with the current revision flag ("|" is default) until the -RE command is encountered.

-RCa Revision Character set to "a"

Change the current revision flagging character to "a".

-RE Revision End

Signal the end of revised text.

****

indexing

****

One thousand cells, numbered 000 thru 999 are available for index generation and counting. They are initialized to a zero value. A warning message is issued whenever an attempt is made to store a new value into a cell containing a non-zero value. Since cell contents may be incremented and decremented, cells provide a primitive counting mechanism for use in text generation. In addition, cells may be indirectly referenced by any command which contains a numeric parameter field by replacing the "nnn" with ".nnn"; the second form of parameter returns the value which is currently stored in cell "nnn" whereas the first parameter form returns the value "nnn".

-A#nnn Print cell value in alphabetic caps

Alphabetic interpretation of the numeric value of the cell will be printed. Thus, a call value of 1 results in a "A", and a value of 4 in a "D". Values greater than 26 or less than 1 will produce an error message.

-B#nnn Print cell value in lower case alpha

Operation is the same as for A#, except that letters are lower case, i.e., 1 is "a" and 4 is "d".

-C+nnn Add 1 to the contents of cell "nnn"
The value currently stored in cell "nnn" is incremented by 1 and the result stored in cell "nnn".

-G#nnn Get and print the number in cell "nnn"
The number stored in cell "nnn" is retrieved and printed. This command is useful for generation of indices or Tables of Contents when used in conjunction with the -S# command.

-H#nnn Print cell value in superscript numbers
The cell value is printed as a superscript number. Useful for footnotes and reference citations.

-I#nnnvvv Initialize cell "nnn" to value "vvv"
The unsigned value "vvv" is stored in cell "nnn" for later use. The value "vvv" must be terminated with a blank

-NLn Number Length for G# H# R# Q#
The value of the cell will be printed right-justified in a field of length "n". The default field length is 2. If the value is longer than the current value on "n", the the additional places will be printed.

-Q#nnn Print cell value in lower case Roman
Same as R#, except numerals are lower case.

-R#nnn Get and print the value in cell "nnn" in Roman numerals
The numeric value stored in cell "nnn" is fetched and then printed in lower case Roman numerals

-S#nnn Store the value of the current page number in cell "nnn"

The value of the current page number is stored in cell "nnn". If cell "nnn" does not have a zero value, then an error is indicated. Cells may be zeroed with the -Z# command.

-Z#nnn Zero cell "nnn"

Initialize the indicated cell to a zero value.

****

formulas

****

Primitive facilities for formula representation are provided by the commands of this section. The introduction to the -DB command provides background information necessary for understanding of the formula generation commands. Note that while superscript and subscript lines can be generated, these special lines provide none of the features necessary for making composite characters (i.e., overprint, underline); neither are there facilities for generating super or subscripts on super or subscript lines. When complex positioning of arguments is required, use of absolute tabs (-AT) and single spaced lines (-CC1) is recommended.

-ML Return to current relative position in the Main Line

Output all the following text on the main line starting at a point immediately following the last character generated. This is a possible termination for the -SU, -SB, or -OP commands. See also -MX.

-MX Return to last main line position used

Place all text following this command on the main line, starting after the last used position in the main line. See also -ML.

-NS No Sub or superscripting

Turn off super-subscript mode. Be sure that the line buffers are completely empty before issuing this command or incompletely generated subscript and superscript lines will not be printed.

-SB Start suBscript

Save the location of the line output pointer and insert text in the Subscript line. See also -SU.

-SU Start sUperscript

Save the line output pointer and insert all text in the superscript line. This mode may be suppressed by an -SB or -NS.

****

macros

****

The TPS macro facility provides a mechanism for shorthand representation of text phrases (or tabular formats, etc.) which are frequently used. TPS macros may have an arbitrary number of arguments (zero or more). To use a macro, it must first be defined; a prototype macro definition is:

-MDa...macro body...-MEa

where "a" is the macro name and "...macro body..." represents the sequence of commands and text which are to be executed whenever the macro is invoked (used). The macro body may contain any TPS command; except for the -NC, these commands are not executed at definition time.

To use a previously defined macro, we command "@a" (or "-MUa"). This causes TPS to read new text from the macro body rather than the normal input stream. Input text is taken from the macro body until one of the

following conditions occurs:

(a) all text in the macro body has been processed.

Action: Return to the invoking text stream.

(b) a macro invocation is required by the macro body text.

Action: Invoke the requested macro. Note: the requested macro must not be the macro you are currently executing.

(c) a request for reversion to the invoker's input stream is encountered (-MR or !).

Action: Revert to the invoking text stream, processing the text until a -MR or ! command is encountered. Return to the macro body and process the remaining text.

Note that the ! may be used in place of the "nnn" command argument within a macro body; when this occurs, the parameter value is obtained from the invoking text stream. Reading of the invoking text stream continues until a matching ! is encountered.

(d) a request for reversion to the master text stream is encountered (-MT).

Action: Revert to the master text stream, processing the text until a -MR or ! command is encountered. Return to the macro body and process the remaining text.

Example:-MDE/ELECTROMAGNETIC /COMPATABILITY-MDE Definition

@E CONSIDERATIONS ... Use

The macro named "E" is invoked whenever the phrase "Electromagnetic Compatability" is required in the text.

Example:-MD:!-AT030!-AT040!-AT050!-ME: Definition

@:10!45!63!17!@:92!13! 2!13! Use

The macro named ":" is defined in order to make a table with three columns of numbers; these columns

begin respectively at column 30,40, and 50. The macro ":" is purged (-MP:) so that the same name may be reused whenever a new table definition is needed.

Three macros have been predefined; they are:

-MD1-PG-SK004-=L-CN-MR--¬L-SK002-EM-ME1

-MD2-SK002-PS010-=L-MR--¬L-SK001-ME2

-MD3-SK001-PS010-UN-MR-NU-SK001-ME3

They are intended to be used for

(1) @1 ...your chapter title...!

(2) @2 ...your major heading...!

(3) @3 ...your sub heading...!

-MC Macro directory Clear

Clear all macro descriptions enabling new ones to be specified.

-MDa Macro Definition

Define the start and name of a new macro. All instructions and text following this instruction, until an -MEa command, are stored as a macro named "a".

-MEa Macro definition End

Terminate the scope of an -MDa command. this command must be preceded by an -MDa command or an invalid command message will be issued.

-MFa Macro oFf

Declare macro "a" to be temporarily non-existent. This command can be nullified by the -MOa command or by re-defining the macro. The macro itself is not changed by this command.

-MOa Macro On

Declare a macro as existing after a -MFa has been issued. This function is performed automatically by an

-MDa.

-MPa Purge Macro "a"

Remove the macro definition for macro "a" from storage. This command is required whenever a redefinition of macro "a" is made which lengthens the original macro body; shorter redefinitions of macro "a" are allowed without use of the "purge" command.

-MR Macro Revert to the last used input stream

Permit a macro to release control to the card reader input stream and obtain control again. This is used to supply parameters to a macro. A shortened form of the -MR command is the "!".

-MT Revert to the Text stream for next argument

Macros which wish to retrieve their arguments from the input text stream rather than the next higher macro body level must use the -MT command rather than the -MR command which only fetches the argument from the immediately calling macro body.

-MUa Use a previously defined Macro

Insert all the text in macro "a" into the input stream at this point. A shortened form of the -MUa command is the "@a".

****

special macros: the ON condition

****

Heading and footing text can be automatically printed at the top and bottom of each page through the use of special parameterless macros called "ON" condition macros (after PL/I). For an "ON" condition macro to be invoked, it must be defined and explicitly enabled. The -PG command should not be used in these macros. The last command of the ON macro must be a dump (-DB)

or a skip (-SKnnn).

-ODn Define "On" condition macro

For "n"=1, a macro which is invoked whenever the top of the page is encountered is defined. For "n"=2, a bottom of page macro is defined. These macros can have no text stream arguments.

-OFn Disable (off) the "n" "ON" condition

The indicated heading or footing macros are turned off.

-OOn Enable "ON" condition "n"

The indicated "ON" condition is enabled. Whenever the top or bottom of page is encountered, the appropriate macro will be invoked.

****

debugging

****

TPS is a programming language and your text program will probably contain some errors. Most errors can be found with only the -=C option; Most errors can be found with only the -=C -TION; THE MORE MYSTERIOUS THE ERROR, THE MORE INFORMATION YOU WILL WANT.

-=C Command summary print

Print a summary of each command encountered. This is a useful debugging aid which still enables utilization of the resultant output.

-¬C No Command summary (default)

Do not print the command summary.

-=I Intersperse source cards

This is the most detailed level of debugging printout. The resulting text output is unusable.

-¬I No interspersed listing (default)
Do not print source card images.

-=S Print sequence numbers
The text in columns 73-80 is printed as sequence numbers. You should give the -SL072 command or use the SM=(1,72) parameter on the EXEC card.

****

basic functions

****

-ATnnn Absolute Tab
Set the line location pointer to "nnn". No position testing is performed allowing text to be placed anywhere in the 132 positions available per line.

-BF Bold Face font
Over strike all non-blank characters in the main line following this command. This implementation over strikes three times.

-BSnnn Back Space
Backspace the line output pointer "nnn" positions. If the left margin is exceeded the line output pointer is set to the current value of the left margin.

-FMnna Fill with "a", leaving a right margin of "nn"
When this command is encountered, the character "a" is printed until the line is filled, with a right margin of "nn" remaining. It is useful for Index and Table of Contents work.

-FWnna Fill With "nn" "a"'s
Exactly "nn" "a"'s will be be printed.

-LC Lower Case

Convert to lower case all text following this command before printing. This is used to terminate an -UC command.

-NC Read the Next Card immediately

Whenever this command is encountered, the balance of the card is considered to be commentary, and the next card is read.

-NF Normal Face font

Resume normal single strike printing of the main line. This nullifies the effect of -BF.

-NU No Underlining

Terminate underlining.

-OP OverPrint

Save the location of the line output pointer and insert text in the overprint line. See also -ML AND -MX.

-SSnnn Skip Spaces

Add "nnn" to the current value of the line output pointer. If the resulting location is greater than the right margin then the line output pointer is set equal to the right margin.

-TB TaB (relative)

Set the line output pointer to the first value saved in the relative tab table that is greater than the current value of the line output pointer.

-UC UpperCase

Convert all characters following this command to upper case before processing. -LC will reset lower case mode.

-UN Start UNderlining

Underline all non-blank characters placed in the main line following this command.

-"" As is text

Dump the following text with blanks unsuppressed, returning to normal mode when the next control command is encountered (any control command). Note that even margin (-EM) requirements override this command. See the -TR command for a discussion of techniques for representing "significant blanks."

--- Output the character "-"

Print the current attention character.

-|* Start comment.

Text following this command is not printed and the line output pointer remains unchanged. All commands except the -*| will not be executed.

-*| End comment.

Resume normal un-commented text processing.

-=L Leave input unchanged

No translation of input is preformed; this is useful when card images or quantities of text in upper case with special symbols are required.

-¬L Normal translation of input (default)

Normal translation of the input stream is carried out.

/a Change print case

If TPS is in upper case mode the character "a" is made lower case. If in lower case mode the character is made upper case.

// Output the character /

****

global control

****

The collection of parameters which specifies the global control values is known as a program status group (PSG). The control values specified in the PSG may be saved and subsequently restored to one of several PSG's; thus, context switching can be done efficiently and concisely by means of PSG saves and restores. The control values in the PSG are listed in Appendix I.

-BDnnn Body length Definition

Set the total number of lines on a page less 3 (the usual paper setting in the printer is three lines from the top), starting from the top of the page. If the length of the page set is greater or equal to the current line number then a new page is started after the line group currently being generated is completed. If nnn is *** pagination is suppressed.

-CAx Change the Attention character

Change the attention character (default "-") to the single character specified. A case change qualification is not accepted in this special case and the use of the case changed alternate for this character is lost.

-CCn Automatic Carriage Control

Insert n-1 blank lines between each line group printed. If "n" is equal to 0 then an additional blank line is generated between paragraphs. Issuing the command with a non-zero "n" resets the inter-PARAGRAPH SPACING. THE DEFAULT SETTINGS ARE -CC2 -CC0.

-CF Correction Off

Disable the operation of the correction character (the "¢" symbol). This command does not take effect until

the following card is read.

-CO Correction On

Turn on the correction feature. The punching of "n" consecutive "¢" symbols will cause the "n" preceding characters to be deleted.

-CQx Case Qualification character change

Modify the case change qualifier (default "/"). The use of the case changed alternate for this character is lost.

-HDnnn Set the HeaDer spacing

Set the total number of lines (less three) to be skipped at the top of each new page. Since the IBM 1403 printer is usually set to start printing three lines from the top of a page these three lines must be taken into consideration when setting the header.

-ON Output is Not printed on the printer

Do not print any output directed to the printer after the execution of this command. A line group in progress will therefore not be printed unless it is dumped before the command is issued.

-OY Output is permitted to print

Restart printer output by cancelling the -ON command. The contents of the line group in progress will not be printed unless the line group is dumped before printing is enabled.

-Rn Reset PSG using reset area n

Restore all the format description elements described in Appendix I to what they were at the time of the last -Sn. If the nth reset area has not been set this instruction is ignored. "n" must be between 0 and 4.

-RS ReSet to default PSG (Program Status Group)

Reset all pertinent overall format variables to the original default values. All of them will not be in effect until the start of the next line. See also -Rn.

-SFnnn Set the First input column

The value "nnn" sets the first column of the input card which will be read. May also be set in the PARM='SM=(NNN,MMM)' field of the EXEC card.

-SLnnn Set Last column of input card

The last column of the input card which will be read is set to "nnn".

-Sn Save the current PSG in reset area "n"

Save overall PSG format controls in save area "n". "n" must be between 0 and 4. see also -Rn.

-** reinitialize TPS

Reinitialize TPS and begin processing of the text which follows.

-STiiijjj... SetTab list

Set up to fifteen relative tab positions to the values specified. Values should be in ascending order and the last value in the list must be followed by at least one blank. If the new tab list is shorter than fifteen values, only the first replaced tab positions are changed.

-TRab Translate "a" to "b"

Every occurrence of "a" as an output character will be changed to "b" just before printing. The characters "a" and "b" may be case qualified. In order to control the placement of blanks in the output text, we may

choose a character not used in the text and utilize it as a filler; subsequent to all justification, this "significant blank" character is translated into a normal blank for printing. For example, -TR¬ WILL CAUSE EVERY "¬" IN THE CURRENT AND SUBSEQUENT LINE GROUPS TO BE PRINTED AS A BLANK.

-ULa Change the UnderLine character
Replace the underline character with "a". This is useful for strike-over and other special effect text. The underline character "a" may be upper case (preceded by a "/").

-=B Brief Mode on
When brief mode is "on", the characters "@" and "!" may be used in place of "-MU" and "-MR" respectively.

-¬B Brief Mode off
Whenever the characters "@" and "!" are required in the text, this command must be issued.

Initial Program Status Group (PSG) Contents

Underline character	-UL_
body length (72 lines)	-BD076
Tab list (15 elements)	-ST020025030...090
Header length	-HD004
Indent	-IS020
Right margin	-RM075
Left margin	-LM015
Carriage control	-CC2
Justification	-EM

Value of quantities not in PSG

Absolute right margin	-AR075
Absolute left margin	-AL015

Parameters for TPS execution may be specified on the EXEC card. The EXEC card is of the form:
// EXEC PGM=TPS,PARM='p1,p2,...,pk'
where p1,...,pk are given by one or more of the parameters shown below:

TN	upper/lower case printer is desired; must also specify //SYSPRINT DD SYSOUT=M OR N.
SM=(M,N)	source margins: begin at "m"; end at "n"
COPY=N	number of output copies required; n < 4. A //SYSUT2 DD SYSOUT=M card is needed if n > 1.
REPRO	copy file specified by SYSIN to SYSPRINT. If copy option was specified in a previous parm, a SYSUT2 file is also required.
C	see ¬=C COMMAND
SEQ	see ¬=S COMMAND
D	see ¬=D COMMAND
I	see ¬=I COMMAND
L	see ¬=L COMMAND
MSIZE=N	macro storage area size (default is 4096 bytes).

Additional copies of this documentation may be obtained by running the following program:

```
// EXEC PGM=TPS,PARM='REPRO'
//STEPLIB DD DSN=F0132.L,DISP=SHR,VOL=SER=LINDA,UNIT=2314
//SYSPRINT DD SYSOUT=M
//SYSIN DD DSN=TPS.MANUAL,DISP=SHR,VOL=SER=CEL001,UNIT=2321
```

APPENDIX D

VARIABLE DECLARATIONS

A. VARIABLE DECLARATIONS FOR THE DELPHI A DATA BASE (QCARDS)

[Some comments have been included where only certain values were acceptable for a variable. "cc" refers to card column(s).]

Card Number One:

VAR001; cc 1-25; "COMMAND NAME"; a 25 character alphanumeric field with trailing blanks.

VAR002; cc 26-30; "BILLET SEQUENCE CODE"; a five character numeric right-justified field with leading zeroes.

VAR003; cc 31-67; "BILLET TITLE"; a 37 character alphanumeric left-justified field with trailing blanks.

VAR004; cc 68-72; "UNIT IDENTIFICATION CODE"; a five character numeric right-justified field with leading zeroes. A list of valid UIC's is given in Table D-1. This variable was used to provide addressing labels.

VAR005; cc 73; "CONUS/OVERSEAS CODE"; a one character numeric field. A list of valid continental United States/ overseas codes is given in Table D-2. This variable described the deployment of the command listed in variables VAR001 and VAR004.

VAR006; cc 74-75; "STATE/COUNTRY CODE"; a two character alphabetic field. A list of valid state/country codes is given in Table D-3. This variable described

the location of the command listed in variables VAR001 and VAR004. Afloat units normally were listed by their homeport locations.

VAR007; cc 76; "CODER NUMBER CODE"; a one character numeric field. A list of valid coder number codes is given in Table D-4. This variable defined the project researcher primarily responsible for the case.

VAR008; cc 77-79; "CARD NUMBER ONE SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. This variable differentiated this case from all other cases within the data base.

VAR009; cc 80; "CARD ONE NUMBER"; a one character numeric field. The only valid entry for this variable was the number 1.

Card Number Two:

VAR010; cc 1-40; "RESPONDENT'S NAME"; a forty character alphabetic left-justified field with trailing blanks.

VAR011; cc 41; "RESPONDENT'S RANK"; a one character numeric field. A list of valid rank codes is given in Table D-5.

VAR012; cc 42-43; "RESPONDENT'S AGE"; a two character numeric right-justified field with leading zeroes. If the respondent's age were unknown, then a "99" was coded.

VAR013; cc 44-47; "RESPONDENT'S PRESENT DESIGNATOR"; a four character numeric right-justified field with leading zeroes. Civilian respondents, and military respondents whose designators were unknown, were coded as "9999".

VAR014; cc 48-51; "RESPONDENT'S NEXT PREVIOUS DESIGNATOR"; a four character numeric right-justified field with leading zeroes. Civilian respondents, and military respondent whose designator history were unknown, were coded as "9999". Military respondents who had only one designator were coded as "0000".

VAR015; cc 52-55; "RESPONDENT'S FIRST DESIGNATOR"; a four character numeric right-justified field with leading zeroes. Civilian respondents, and military respondents whose designator history were unknown, were coded as "9999". Military respondents who had less than three designators were coded as "0000".

VAR016; cc 56-60; "BILLET SUBSPECIALTY CODE"; a five character mixed alphanumeric left-justified field with trailing blanks. The first four characters were numeric and the fifth character was blank, numeric, or alphabetic. If the respondent were civilian, or military and the billet subspecialty code were unknown, then this variable was coded as "99999". If the respondent were military and the billet did not have a subspecialty code then this variable was coded as "00000".

VAR017; cc 61-65; "RESPONDENT'S SUBSPECIALTY CODE"; a five character mixed alphanumeric left-justified field with trailing blanks. The first four characters were numeric and the fifth character was blank, numeric, or alphabetic. If the respondent were a civilian, or military and his subspecialty code were unknown, then

this variable was coded as "99999". If the respondent were military and he did not have a subspecialty code then this variable was coded as "00000".

VAR018; cc 66; "RESPONDENT'S EDUCATIONAL LEVEL"; a one character numeric field. A list of valid educational level codes is provided in Table D-6.

VAR019; cc 67-71; "RESPONDENT'S TRAINING USED CODE(S)"; a five character numeric left-justified field with trailing blanks. This variable was the composite of up to five different single-character numeric training codes (see Table D-7) which the respondent used in his billet. Values were coded in any order and the absence of any training used was coded as five blank characters.

VAR020; cc 72; "RESPONDENT'S FIRST INTELLIGENCE BILLET CODE"; a one character numeric field. Only one of three codes was acceptable for this variable: "0" indicated that the respondent had had previous intelligence related billets, "1" indicated that the respondent had not had previous intelligence related tour(s), and "9" indicated the respondent's status was unknown.

VAR021; cc 73-74; "NUMBER YEARS PREVIOUS INTELLIGENCE EXPERIENCE:; a two character numeric right-justified field with leading zeroes. Had the respondent had previous intelligence related billets, i.e., VAR020 equalled "0", then the number of years of previous intelligence

related experience was indicated in this field. Had the respondent not had previous intelligence related billets, or if his status were unknown, i.e., VAR020 equalled "1" or "9", then this variable was coded as "99". This variable did not include the amount of time spent in the respondent's then present billet.

VAR022; cc 75-76; "NUMBER OF MONTHS IN PRESENT BILLET"; a two character numeric right-justified field with leading zeroes. If the number of months the respondent had spent in his then present billet were unknown, then this variable was coded as "99".

VAR023; cc 77-79; "CARD NUMBER TWO SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR023 equalled VAR008 in all cases.

VAR024; cc 80; "CARD TWO NUMBER"; a one character numeric field. The only valid entry for this variable was the number "2'.

Card Number Three:

VAR025; cc 1-3; "PERCENTAGE INTELLIGENCE OFFICE ADMINISTRATION"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR026; cc 4; "VALIDITY OF INTELLIGENCE OFFICE ADMINISTRATION"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that intelligence office administration was not a valid

output; "1" indicated that that output was valid; "9" indicated that the respondent did not indicate his choice concerning the validity of intelligence office administration as it pertained to his billet.

VAR027; cc 5-7; "PERCENTAGE BRIEFS AND DEBRIEFS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR028; cc 8; "VALIDITY OF BRIEFS AND DEBRIEFS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that briefs and debriefs were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of briefs and debriefs as they pertained to his billet.

VAR029; cc 9-11; "PERCENTAGE BUDGETS AND BUDGETING"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR030; cc 12; "VALIDITY OF BUDGETS AND BUDGETING"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that budgets and budgeting were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the

validity of budgets and budgeting as they pertained to his billet.

VAR031; cc 13-15; "PERCENTAGE CHARTS AND AUDIO-VISUAL AIDS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR032; cc 16; "VALIDITY OF CHARTS AND AUDIO-VISUAL AIDS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that charts and audio-visual aids were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of charts and audio-visual aids as they pertained to his billet.

VAR033; cc 17-19; "PERCENTAGE COUNTERINTELLIGENCE STUDIES"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR034; cc 20; "VALIDITY OF COUNTERINTELLIGENCE STUDIES"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that counterintelligence studies was not a valid output; "1" indicated that that output was valid; "9" indicated that the respondent did not indicate his choice concerning the validity of counterintelligence studies as they pertained to his billet.

VAR035; cc 21-23; "PERCENTAGE DATA ANALYSIS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR036; cc 24; "VALIDITY OF DATA ANALYSIS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that data analysis as not a valid output; "1" indicated that that output was valid; "9" indicated that the respondent did not indicate his choice concerning the validity of data analysis as it pertained to his billet.

VAR037; cc 25-27; "PERCENTAGE DECISIONS AND RECOMMENDATIONS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR038; cc 28; "VALIDITY OF DECISIONS AND RECOMMENDATIONS": a one character numeric field. Only one of three values was coded in this field: "0" indicated that decisions and recommendations were not valid outputs' "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of decisions and recommendations as they pertained to his billet.

VAR039; cc 29-31; "PERCENTAGE ESTIMATES"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR040; cc.32; "VALIDITY OF ESTIMATES"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that estimates were not a valid output; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of estimates as they pertained to his billet.

VAR041; cc 33-35; "PERCENTAGE INTELLIGENCE ANNEXES TO OPORDS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR042; cc 36; "VALIDITY OF INTELLIGENCE ANNEXES TO OPORDS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that intelligence annexes to operation orders were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of intelligence annexes to operation orders as they pertained to his billet.

VAR043; cc 37-39; "PERCENTAGE INTELLIGENCE COLLECTION PLANS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR044; cc 40; "VALIDITY OF INTELLIGENCE COLLECTION PLANS"; a one character numeric field. Only one of three

values was coded in this field: "0" indicated that intelligence collection plans were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of intelligence collection plans as they pertained to his billet.

VAR045; cc 41-43; "PERCENTAGE INTELLIGENCE COLLECTION TASKING"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR046; cc 44; "VALIDITY OF INTELLIGENCE COLLECTION TASKING"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that intelligence collection tasking was not a valid output; "1" indicated that that output was valid; "9" indicated that the respondent did not indicate his choice concerning the validity of intelligence collection tasking as it pertained to his billet.

VAR047; cc 45-47; "PERCENTAGE INTELLIGENCE INFORMATION REPORTS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR048; cc 48; "VALIDITY OF INTELLIGENCE INFORMATION REPORTS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that Intelligence Information Reports were not valid outputs;

"1" indiated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of Intelligence Information Reports as they pertained to his billet.

VAR049; cc 49-51; "PERCENTAGE INTELLIGENCE STUDIES"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage was unknown.

VAR050; cc 52; "VALIDITY OF INTELLIGENCE STUDIES"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that intelligence studies were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of intelligence studies as they pertained to his billet.

VAR051; cc 53-55; "PERCENTAGE INTERFACE WITH ADP-TELECOMMS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR052; cc 56; "VALIDITY OF INTERFACE WITH ADP-TELECOMMS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that interfacing with automatic data processing and/or telecommunications was not a valid output; "1" indicated that output was a valid output; "9" indicated that the respondent did not indicate his choice

concerning the validity of interfacing with automatic data processing and/or telecommunications as it pertained to his billet.

VAR053; cc 57-59; "PERCENTAGE ORDERS OF BATTLE"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR054; cc 60; "VALIDITY OF ORDERS OF BATTLE"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that orders-of-battle was not a valid output; "1" indicate that that output was valid: "9" indicated that the respondent did not indicate his choice concerning the validity of orders-of-battle as it pertained to his billet.

VAR055; cc 61-63; "PERCENTAGE PHYSICAL SECURITY"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR056; cc 64; "VALIDITY OF PHYSICAL SECURITY"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that physical security was not a valid output; "1" indicated that that output was valid; "9" indicated that the respondent did not indicate his choice concerning the validity of physical security as it pertained to his billet.

VAR057; cc 65-67; "PERCENTAGE TACTICAL PLOTS"; a three character integer numeric right-justified field with leading

zeroes. This variable was coded "999" if the percentage were unknown.

VAR058; cc 68; "VALIDITY OF TACTICAL PLOTS"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that tactical plots were not valid outputs; "1" indicated that those outputs were valid; "9" indicated that the respondent did not indicate his choice concerning the validity of tactical plots as they pertained to his billet.

[Note: card columns 69-76 were unused blanks.]

VAR059; cc 77-79; "CARD NUMBER THREE SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR059 equalled VAR008 and VAR023 in all cases.

VAR060; cc 80; "CARD THREE NUMBER"; a one character numeric field. The only valid entry for this variable was the number "3".

Card Number Four:

VAR061; cc 1-32; "FIRST ADDITIONAL OUTPUT WORDING"; a 32 character alphanumeric left-justified field with trailing blanks.

VAR062; cc 33-35; "FIRST ADDITIONAL OUTPUT CODE"; a three character alphabetic left-justified field with trailing blanks. This variable was a composite of up to three different single-character alphabetic additional output codes listed in Table D-8 used to

codify the first additional output. Values were coded in any order and the absence of a suitable breakdown was coded as three blank characters.

VAR063; cc 36-38; "PERCENTAGE TIME DEVOTED TO FIRST ADDITIONAL OUTPUT"; a three character integer numeric right-justified field with leading zeroes. "999" was not a valid entry for this variable.

VAR064; cc 39-70; "SECOND ADDITIONAL OUTPUT WORDING"; a 32 character alphanumeric left-justified field with trailing blanks.

VAR065; cc 71-73; "SECOND ADDITIONAL OUTPUT CODE"; a three character alphabetic left-justified field with trailing blanks. This variable was a composite of up to three different single-character alphabetic additional output codes listed in Table D-8 used to codify the second additional output. Values were coded in any order and the absence of a suitable breakdown was coded as three blank characters.

VAR066; cc 74-76; "PERCENTAGE TIME DEVOTED TO SECOND ADDITIONAL OUTPUT"; a three integer numeric right-justified field with leading zeroes. "999" was not a valid entry for this variable.

VAR067; cc 77-79; "CARD NUMBER FOUR SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR067 equalled VAR008, VAR023, and VAR059 in all cases.

VAR068; cc 80; "CARD FOUR NUMBER"; a one character numeric field. The only valid entry for this variable was the number "4".

Card Number Five:

VAR069; cc 1-32; "THIRD ADDITONAL OUTPUT WORDING"; a 32 character alphanumeric left-justified field with trailing blanks.

VAR070; cc 33-35; "THIRD ADDITIONAL OUTPUT CODE"; a three character alphabetic left-justified field with trailing blanks. This variable was a composite of up to three different single-character alphabetic additional output codes listed in Table D-8 used to codify the third additional output. Values were coded in any order and the absence of a suitable breakdown was coded as three blank characters.

VAR071; cc 36-38; "PERCENTAGE TIME DEVOTED TO THIRD ADDITIONAL OUTPUT"; a three character integer numeric right-justified field with leading zeroes. "999" was not a valid entry for this variable.

VAR072; cc 39-70; "FOURTH ADDITIONAL OUTPUT WORDING"; a 32 character alphanumeric left-justified field with trailing blanks.

VAR073; cc 71-73; "FOURTH ADDITIONAL OUTPUT CODE"; a three character alphabetic left-justified field with trailing blanks. This variable was a composite of up to three different single-character alphabetic additional output

codes listed in Table D-8 used to codify the fourth additional output. Values were coded in any order and the absence of a suitable breakdown was coded as three blank characters.

VAR074; cc 74-76; "PERCENTAGE TIME DEVOTED TO FOURTH ADDITIONAL OUTPUT"; a three character integer numeric right-justified field with leading zeroes. "999" was not a valid entry for this variable.

VAR075; cc 77-79; "CARD NUMBER FIVE SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR075 equalled VAR008, VAR023, VAR059, and VAR067 in all cases.

VAR076; cc 80; "CARD FIVE NUMBER"; a one character numeric field. The only valid entry for this variable was the number "5".

Card Number Six:

VAR077; cc 1-32; "FIFTH ADDITIONAL OUTPUT WORDING"; a 32 character alphanumeric left-justified field with trailing blanks.

VAR078; cc 33-35; "FIFTH ADDITIONAL OUTPUT CODE"; a three character alphabetic left-justified field with trailing blanks. This variable was a composite of up to three different single-character alphabetic additional output codes listed in Table D-8 used to codify the fifth additional output. Values were coded in any order and the absence of a suitable breakdown was coded as three blank characters.

VAR079; cc 36-38; "PERCENTAGE TIME DEVOTED TO FIFTH ADDITIONAL OUTPUT"; a three character integer numeric right-justified field with leading zeroes. "999" was not a valid entry for this variable.

VAR080; cc 39-41; "PERCENTAGE TIME DEVOTED TO NON-INTELLIGENCE RELATED OUTPUTS"; a three character integer numeric right-justified field with leading zeroes.

[Note: card columns 42-76 were unused blanks.]

VAR081; cc 77-79; "CARD NUMBER SIX SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR081 equalled VAR008, VAR023, VAR059, VAR067, and VAR075 in all cases.

VAR082; cc 80; "CARD SIX NUMBER"; a one character numeric field. The only valid entry for this variable was the number "6".

Card Number Seven:

VAR083; cc 1-75; "RESPONDENT'S AND CODER COMMENTS"; a 75 character alphanumeric left-justified field with trailing blanks.

VAR084; cc 76; "COMMENTS CONTINUATION CODE"; a one character numeric field. Only one of three values was coded in this field: "0" indicated that there were no comments associated with this case; "1" indicated that there were some comments, but that all comments were included within VAR083; "2" indicated that there were some comments continued beyond the capacity of VAR083.

VAR085; cc 77-79; "CARD NUMBER SEVEN SEQUENCE (CASE) NUMBER"; a three character right-justified field with leading zeroes. VAR085 equalled VAR008, VAR023, VAR059, VAR067, VAR075, and VAR081 in all cases.

VAR086; cc 80; "CARD SEVEN NUMBER"; a one character numeric field. The only valid entry for this variable was the number "7".

B. VARIABLE DECLARATIONS FOR THE MERGED QUESTIONNAIRE AND INTERVIEW CARDS (QICARDS)

Card numbers one through seven immediately preceded the following appended card images. Codes for these variables are listed in Table D-9.

Card Number Eight, Sub-card Number 01:

VAR087; cc 1; "USED COLLEGE ALGEBRA LEVEL"; code = 01.1.

VAR088; cc 2; "USED BEGINNING CALCULUS LEVEL"; code = 01.2.

VAR089; cc 3; "USED PROBABILITY AND STATISTICS LEVEL"; code = 01.3.

VAR090; cc 4; "USED ADVANCED CALCULUS LEVEL"; code = 01.4.

VAR091; cc 5; "USED FOREIGN LANGUAGE LEVEL"; code = 02.1.

VAR092; cc 6; "USED USSR AREA STUDIES LEVEL"; code = 03.1.

VAR093; cc 7; "USED PRC AREA STUDIES LEVEL"; code = 03.2.

VAR094; cc 8; "USED MID-EAST AREA STUDIES LEVEL"; code = 03.3.

VAR095; cc 9; "USED EUROPEAN AREA STUDIES LEVEL"; code = 03.4.

VAR096; cc 10; "USED LATIN AMERICAN AREA STUDIES LEVEL"; code = 03.5.

VAR097; cc 11; "USED AFRICAN AREA STUDIES LEVEL"; code = 03.6.

VAR098; cc 12; "USED OPERATIONS ANALYSIS LEVEL"; code = 04.1.

VAR099; cc 13; "USED INTERNATIONAL RELATIONS LEVEL"; code = 05.1.

VAR100; cc 14; "USED UNDERWATER ACOUSTICS LEVEL"; code = 06.1.

VAR101; cc 15; "USED SONAR SYSTEMS LEVEL"; code = 06.2.

VAR102; cc 16; "USED COMMUNICATIONS SYSTEMS LEVEL"; code = 06.3.

VAR103; cc 17; "USED RADAR SYSTEMS LEVEL"; code = 06.4.

VAR104; cc 18; "USED OPTICAL SYSTEMS LEVEL"; code = 06.5.

VAR105; cc 19; "USED LASER SYSTEMS LEVEL"; code = 06.6.

VAR106; cc 20; "USED COLLECTION SYSTEMS LEVEL"; code = 06.7.

VAR107; cc 21; "USED NATIONAL/NAVAL BUDGET PROCESS LEVEL"; code = 07.1.

VAR108; cc 22; "USED THREAT & NET ASSESSMENT LEVEL"; code = 07.2.

VAR109; cc 23; "USED NATIONAL SECURITY AFFAIRS/INTELLIGENCE ORGANIZATION LEVEL"; code = 07.3.

VAR110; cc 24; "USED SOVIET NAVAL FORCES STUDIES LEVEL"; code = 08.1.

VAR111; cc 25; "USED SOVIET AIR FORCES STUDIES LEVEL"; code = 08.2.

VAR112; cc 26; "USED SOVIET GROUND FORCES STUDIES LEVEL"; code = 08.3.

VAR113; cc 27; "USED SOVIET PVO STRANYY STUDIES LEVEL"; code = 08.4.

VAR114; cc 28; "USED SOVIET STRATEGIC ROCKET TROOPS STUDIES LEVEL"; code = 08.5.

VAR115; cc 29; "USED SOVIET MERCHANT/FISHING/OCEANOGRAPHIC STUDIES LEVEL"; code = 08.6.

VAR116; cc 30; "USED BLUE FORCES COLLECTION SYSTEMS STUDIES LEVEL"; code = 09.1.

VAR117; cc 31; "USED UNITED STATES NAVAL FORCES STUDIES LEVEL"; code = 09.2.

VAR118; cc 32; "USED UNITED STATES NON-NAVAL FORCES STUDIES LEVEL"; code = 09.3.

VAR119; cc 33; "USED ALLIED CAPABILITY STUDIES LEVEL"; code = 09.4.

VAR120; cc 34; "USED ADP SYSTEM DESIGN/MANAGEMENT LEVEL"; code = 10.1.

VAR121; cc 35; "USED ADP HARDWARE OPERATIONS LEVEL"; code = 10.2.

VAR122; cc 36; "USED ADP SOFTWARE OPERATIONS LEVEL"; code = 10.3.

VAR123; cc 37; "USED ADP BASIC INTERFACE OPERATION LEVEL"; code = 10.4.

VAR124; cc 38; "USED BRIEFING TECHNIQUES LEVEL"; code = 11.1.

VAR125; cc 39; "USED WRITING SKILLS LEVEL"; code = 11.2.

VAR126; cc 40; "USED ORGANIZATION OF THOUGHT LEVEL"; code = 11.3.

VAR127; cc 41; "USED MANAGEMENT OF COLLECTION SYSTEMS STUDIES LEVEL"; code = 12.1.

VAR128; cc 42; "USED PERT MANAGEMENT STUDIES LEVEL"; code = 12.2.

VAR129; cc 43; "USED MANAGEMENT BY OBJECTIVES LEVEL"; code = 12.3.

VAR130; cc 44; "USED PERSONNEL MANAGEMENT LEVEL"; code = 12.4.

VAR131; cc 45; "USED FINANCIAL MANAGEMENT LEVEL"; code = 12.5.

VAR132; cc 46; "USED LABOR RELATIONS LEVEL"; code = 12.6.

[Note: card columns 47-73 were unused blanks.]

VAR133; cc 74; "CODER RESPONSIBILITY CODE"; a one character numeric field. See Table D-4 for valid entries.

VAR134; cc 75-76; "CARD NUMBER 8-01 SUBCARD NUMBER"; a two character numeric right-justified field with leading zeroes. Always equalled "01" for this card.

VAR135; cc 77-79; "CARD NUMBER 8-01 SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR135 equalled VAR008, VAR023, VAR059, VAR067, VAR075, VAR081, and VAR085 in all cases.

VAR136; cc 80; "CARD EIGHT, SUB-CARD 01, CARD NUMBER"; a one character numeric field. The only valid entry for this field was the number "8".

Card Number Eight, Sub-Card Number 02:

VAR137; cc 1; "NEEDED COLLEGE ALGEBRA LEVEL"; code = 01.1.

VAR138; cc 2; "NEEDED BEGINNING CALCULUS LEVEL"; code = 01.2.

VAR139; cc 3; "NEEDED PROBABILITY AND STATISTICS LEVEL"; code = 01.3.

VAR140; cc 4; "NEEDED ADVANCED CALCULUS LEVEL"; code = 01.4.

VAR141; cc 5; "NEEDED FOREIGN LANGUAGE LEVEL"; code = 02.1.

VAR142; cc 6; "NEEDED USSR AREA STUDIES LEVEL"; code = 03.1.

VAR143; cc 7; "NEEDED PRC AREA STUDIES LEVEL"; code = 03.2.

VAR144; cc 8; "NEEDED MID-EAST AREA STUDIES LEVEL"; code = 03.3.

VAR145; cc 9; "NEEDED EUROPEAN AREA STUDIES LEVEL"; code = 03.4.

VAR146; cc 10; "NEEDED LATIN AMERICAN AREA STUDIES LEVEL"; code = 03.5.

VAR147; cc 11; "NEEDED AFRICAN AREA STUDIES LEVEL"; code = 03.6.

VAR148; cc 12; "NEEDED OPERATIONS ANALYSIS LEVEL"; code = 04.1.

VAR149; cc 13; "NEEDED INTERNATIONAL RELATIONS LEVEL";
code = 05.1.

VAR150; cc 14; "NEEDED UNDERWATER ACOUSTICS LEVEL"; code = 06.1.

VAR151; cc 15; "NEEDED SONAR SYSTEMS LEVEL"; code = 06.2.

VAR152; cc 16; "NEEDED COMMUNICATIONS SYSTEMS LEVEL";
code = 06.3.

VAR153; cc 17; "NEEDED RADAR SYSTEMS LEVEL"; code = 06.4.

VAR154; cc 18; "NEEDED OPTICAL SYSTEMS LEVEL"; code = 06.5.

VAR155; cc 19; "NEEDED LASER SYSTEMS LEVEL"; code = 06.6.

VAR156; cc 20; "NEEDED COLLECTION SYSTEMS LEVEL"; code = 06.7.

VAR157; cc 21; "NEEDED NATIONAL/NAVAL BUDGET PROCESS LEVEL";
code = 07.1.

VAR158; cc 22; "NEEDED THREAT & NET ASSESSMENT LEVEL";
code = 07.2.

VAR159; cc 23; "NEEDED NATIONAL SECURITY AFFAIRS/INTELLIGENCE
ORGANIZATION LEVEL"; code = 07.3.

VAR160; cc 24; "NEEDED SOVIET NAVAL FORCES STUDIES LEVEL";
code = 08.1.

VAR161; cc 25; "NEEDED SOVIET AIR FORCES STUDIES LEVEL";
code = 08.2.

VAR162; cc 26; "NEEDED SOVIET GROUND FORCES STUDIES LEVEL";
code = 08.3.

VAR163; cc 27; "NEEDED SOVIET PVO STRANYY STUDIES LEVEL";
code = 08.4.

VAR164; cc 28; "NEEDED SOVIET STRATEGIC ROCKET TROOPS STUDIES LEVEL"; code = 08.5.

VAR165; cc 29; "NEEDED SOVIET MERCHANT/FISHING/OCEANOGRAPHIC STUDIES LEVEL"; code = 08.6.

VAR166; cc 30; "NEEDED BLUE FORCES COLLECTION SYSTEMS STUDIES LEVEL"; code = 09.1.

VAR167; cc 31; "NEEDED UNITED STATES NAVAL FORCES STUDIES LEVEL"; code = 09.2.

VAR168; cc 32; "NEEDED UNITED STATES NON-NAVAL FORCES STUDIES LEVEL"; code = 09.3.

VAR169; cc 33; "NEEDED ALLIED CAPABILITY STUDIES LEVEL"; code = 09.4.

VAR170; cc 34; "NEEDED ADP SYSTEM DESIGN/MANAGEMENT LEVEL"; code = 10.1.

VAR171; cc 35; "NEEDED ADP HARDWARE OPERATIONS LEVEL"; code = 10.2.

VAR172; cc 36; "NEEDED ADP SOFTWARE OPERATIONS LEVEL"; code = 10.3.

VAR173; cc 37; "NEEDED ADP BASIC INTERFACE OPERATION LEVEL"; code = 10.4.

VAR174; cc 38; "NEEDED BRIEFING TECHNIQUES LEVEL"; code = 11.1.

VAR175; cc 39; "NEEDED WRITING SKILLS LEVEL"; code = 11.2

VAR176; cc 40; "NEEDED ORGANIZATION OF THOUGHT LEVEL"; code = 11.3.

VAR177; cc 41; "NEEDED MANAGEMENT OF COLLECTION SYSTEMS STUDIES LEVEL"; code = 12.1.

VAR178; cc 42; "NEEDED PERT MANAGEMENT STUDIES LEVEL"; code = 12.2.

VAR179; cc 43; "NEEDED MANAGEMENT BY OBJECTIVES LEVEL"; code = 12.3.

VAR180; cc 44; "NEEDED PERSONNEL MANAGEMENT LEVEL"; code = 12.4.

VAR181; cc 45; "NEEDED FINANCIAL MANAGEMENT LEVEL"; code = 12.5.

VAR182; cc 46; "NEEDED LABOR RELATIONS LEVEL"; code = 12.6.

[Note: card columns 47-73 were unused blanks.]

VAR183; cc 74; "CODER RESPONSIBILITY CODE"; a one character numeric field. VAR183 equalled VAR133 in all instances. See Table D-4 for valid entries.

VAR184; cc 75-76; "CARD NUMBER 8-02 SUBCARD NUMBER"; a two character numeric right-justified field with leading zeroes. Always equalled "02" for this card.

VAR185; cc 77-79; "CARD NUMBER 8-02 SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR185 equalled VAR008, VAR023, VAR067, VAR075, VAR081, VAR085, and VAR135 in all cases.

VAR186; cc 80; "CARD EIGHT, SUB-CARD 02, CARD NUMBER"; a one character numeric field. The only valid entry for this field was the number "8".

C. VARIABLE DECLARATIONS FOR THE MERGED QUESTIONNAIRE, INTERVIEW, AND D1CARDS FILE (QID1CARD)

Card numbers one through eight (sub-card 02) immediately preceded the following appended card images.

Card Number Eight, Sub-card Number 03:

VAR187; cc 1-3; "D1 PERCENTAGE ADMINISTRATION OF INTELLIGENCE OFFICE"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR188; cc 4-6; "D1 PERCENTAGE RESOURCE/ORGANIZATIONAL MANAGEMENT"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR189; cc 7-9; "D1 PERCENTAGE BUDGETING AND FISCAL PLANNING"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR190; cc 10-12; "D1 PERCENTAGE DECISIONS AND RECOMMENDATIONS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR191; cc 13-15; "D1 PERCENTAGE BRIEFS AND DEBRIEFS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR192; cc 16-18; "D1 PERCENTAGE LIAISON"; a three character integer numeric right-justified field with leading

zeroes. This variable was coded "999" if the percentage were unknown.

VAR193; cc 19-21; "D1 PERCENTAGE CHARTS AND AUDIO-VISUAL AIDS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR194; cc 22-24; "D1 PERCENTAGE COUNTERINTELLIGENCE STUDIES"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR195; cc 25-27; "D1 PERCENTAGE DATA ANALYSIS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR196; cc 28-30; "D1 PERCENTAGE ESTIMATES"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR197; cc 31-33; "D1 PERCENTAGE INTELLIGENCE ANNEXES TO OPORDS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR198; cc 34-36; "D1 PERCENTAGE INTELLIGENCE COLLECTION PLANS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR199; cc 37-39; "Dl PERCENTAGE INTELLIGENCE COLLECTION TASKING"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR200; cc 40-42; "Dl PERCENTAGE INTELLIGENCE INFORMATION REPORTS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR201; cc 43-45; "Dl PERCENTAGE INTERFACE WITH ADP/TELECOMMUNICATIONS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR202; cc 46-48; "Dl PERCENTAGE ORDERS-OF-BATTLE"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR203; cc 49-51; "Dl PERCENTAGE PHYSICAL SECURITY"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR204; cc 52-54; "Dl PERCENTAGE TACTICAL PLOTS"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR205; cc 55-57; "Dl PERCENTAGE NON-INTELLIGENCE RELATED OUTPUTS"; a three character integer numeric right

justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

VAR206; cc 58-60; "D1 PERCENTAGE COUNSELING AND TRAINING"; a three character integer numeric right-justified field with leading zeroes. This variable was coded "999" if the percentage were unknown.

[Note: card columns 61-71 were unused blanks.]

VAR207; cc 72; "SPECIAL CASE FLAG"; a one character numeric field. Only one of two different values was coded in this field: "0" indicated no special handling was required of this case; "1" indicated special external handling was required of this case.

VAR208; cc 73; "ANSWER TO DEFENSE INTELLIGENCE SCHOOL QUESTION"; a one character numeric field. Only one of three different values was coded in this field: "0" indicated that the question was not asked in the DELPHI; "1" indicated that the question was asked of the respondent and that he answered in the negative; "3" indicated that the question was asked of the respondent and that his answer was in the affirmative.

VAR209; cc 74; "DELPHI RESPONSE VALIDITY CODE"; a one character numeric field. Only one of two different values was coded in this field: "0" indicated that the information contained in this card was not a response to the DELPHI Questionnaire, but only a dummy record generated by the file generation program; "1" indicated that the

information contained was a valid response to the questionnaire. A "0" code implied VAR187 through VAR206 were "999's".

<u>VAR210</u>; cc 75-76; "CARD NUMBER 8-03 SUBCARD NUMBER"; a two character numeric right-justified field with leading zeroes. Always equalled "03" for this card.

<u>VAR211</u>; cc 77-79; "CARD NUMBER 8-03 SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR211 equalled VAR008, VAR023, VAR059, VAR067, VAR075, VAR081, VAR085, VAR135, and VAR185 in all cases.

<u>VAR212</u>; cc 80; "CARD EIGHT, SUB-CARD 03, CARD NUMBER"; a one character numeric field. The only valid entry for this field was the number "8".

The D1CARDS were mechanically sorted in ascending order by case number prior to having been placed on disk storage.

D. VARIABLE DECLARATIONS FOR THE MERGED QUESTIONNAIRE, INTERVIEW, D1CARDS, AND D2CARDS (QID12CDS)

Card numbers one through eight (sub-card 03) immediately preceded the following appended card images.

Card Number Eight, Sub-card Number 04:

VAR213; cc 1; "D2 USED COLLEGE ALGEBRA LEVEL"; a one character numeric field.

VAR214; cc 2; "D2 NEEDED COLLEGE ALGEBRA LEVEL"; a one character numeric field.

VAR215; cc 3; "D2 FUTURE COLLEGE ALGEBRA LEVEL"; a one character numeric field.

VAR216; cc 4; "D2 USED BEGINNING CALCULUS LEVEL"; a one character numeric field.

VAR217; cc 5; "D2 NEEDED BEGINNING CALCULUS LEVEL"; a one character numeric field.

VAR218; cc 6; "D2 FUTURE BEGINNING CALCULUS LEVEL"; a one character numeric field.

VAR219; cc 7; "D2 USED ADVANCED CALCULUS LEVEL"; a one character numeric field.

VAR220; cc 8; "D2 NEEDED ADVANCED CALCULUS LEVEL"; a one character numeric field.

VAR221; cc 9; "D2 FUTURE ADVANCED CALCULUS LEVEL"; a one character numeric field.

VAR222; cc 10; "D2 USED PROBABILITY AND STATISTICS LEVEL"; a one character numeric field.

VAR223; cc 11; "D2 NEEDED PROBABILITY AND STATISTICS LEVEL"; a one character numeric field.

VAR224; cc 12; "D2 FUTURE PROBABILITY AND STATISTICS LEVEL"; a one character numeric field.

VAR225; cc 13; "D2 USED FOREIGN LANGUAGE LEVEL"; a one character numeric field.

VAR226; cc 14; "D2 NEEDED FOREIGN LANGUAGE LEVEL"; a one character numeric field.

VAR227; cc 15; "D2 FUTURE FOREIGN LANGUAGE LEVEL"; a one character numeric field.

VAR228; cc 16; "D2 USED USSR AREA STUDIES LEVEL"; a one character numeric field.

VAR229; cc 17; "D2 NEEDED USSR AREA STUDIES LEVEL"; a one character numeric field.

VAR230; cc 18; "D2 FUTURE USSR AREA STUDIES LEVEL"; a one character numeric field.

VAR231; cc 19; "D2 USED PRC AREA STUDIES LEVEL"; a one character numeric field.

VAR232; cc 20; "D2 NEEDED PRC AREA STUDIES LEVEL"; a one character numeric field.

VAR233; cc 21; "D2 FUTURE PRC AREA STUDIES LEVEL"; a one character numeric field.

VAR234; cc 22; "D2 USED MIDDLE EAST AREA STUDIES LEVEL"; a one character numeric field.

VAR235; cc 23; "D2 NEEDED MIDDLE EAST AREA STUDIES LEVEL"; a one character numeric field.

VAR236; cc 24; "D2 FUTURE MIDDLE EAST AREA STUDIES LEVEL"; a one character numeric field.

VAR237; cc 25; "D2 USED EUROPEAN AREA STUDIES LEVEL"; a one character numeric field.

VAR238; cc 26; "D2 NEEDED EUROPEAN AREA STUDIES LEVEL"; a one character numeric field.

VAR239; cc 27; "D2 FUTURE EUROPEAN AREA STUDIES LEVEL"; a one character numeric field.

VAR240; cc 28; "D2 USED LATIN AMERICAN AREA STUDIES LEVEL"; a one character numeric field.

VAR241; cc 29; "D2 NEEDED LATIN AMERICAN AREA STUDIES LEVEL"; a one character numeric field.

VAR242; cc 30; "D2 FUTURE LATIN AMERICAN AREA STUDIES LEVEL"; a one character numeric field.

VAR243; cc 31; "D2 USED AFRICAN AREA STUDIES LEVEL"; a one character numeric field.

VAR244; cc 32; "D2 NEEDED AFRICAN AREA STUDIES LEVEL"; a one character numeric field.

VAR245; cc 33; "D2 FUTURE AFRICAN AREA STUDIES LEVEL"; a one character numeric field.

VAR246; cc 34; "D2 USED OPERATIONS ANALYSIS LEVEL"; a one character numeric field.

VAR247; cc 35; "D2 NEEDED OPERATIONS ANALYSIS LEVEL"; a one character numeric field.

VAR248; cc 36; "D2 FUTURE OPERATIONS ANALYSIS LEVEL"; a one character numeric field.

VAR249; cc 37; "D2 USED INTERNATIONAL RELATIONS THEORY LEVEL"; a one character numeric field.

VAR250; cc 38; "D2 NEEDED INTERNATIONAL RELATIONS THEORY LEVEL"; a one character numeric field.

VAR251; cc 39; "D2 FUTURE INTERNATIONAL RELATIONS THEORY LEVEL"; a one character numeric field.

VAR252; cc 40; "D2 USED UNDERWATER ACOUSTICS LEVEL"; a one character numeric field.

VAR253; cc 41; "D2 NEEDED UNDERWATER ACOUSTICS LEVEL"; a one character numeric field.

VAR254; cc 42; "D2 FUTURE UNDERWATER ACOUSTICS LEVEL"; a one character numeric field.

VAR255; cc 43; "D2 USED SONAR SYSTEMS LEVEL"; a one character numeric field.

VAR256; cc 44; "D2 NEEDED SONAR SYSTEMS LEVEL"; a one character numeric field.

VAR257; cc 45; "D2 FUTURE SONAR SYSTEMS LEVEL"; a one character numeric field.

VAR258; cc 46; "D2 USED COMMUNICATIONS SYSTEMS LEVEL"; a one character numeric field.

VAR259; cc 47; "D2 NEEDED COMMUNICATIONS SYSTEMS LEVEL"; a one character numeric field.

VAR260; cc 48; "D2 FUTURE COMMUNICATIONS SYSTEMS LEVEL"; a one character numeric field.

VAR261; cc 49; "D2 USED RADAR SYSTEMS LEVEL"; a one character numeric field.

VAR262; cc 50; "D2 NEEDED RADAR SYSTEMS LEVEL"; a one character numeric field.

VAR263; cc 51; "D2 FUTURE RADAR SYSTEMS LEVEL"; a one character numeric field.

VAR264; cc 52; "D2 USED OPTICS LEVEL"; a one character numeric field.

VAR265; cc 53; "D2 NEEDED OPTICS LEVEL"; a one character numeric field.

VAR266; cc 54; "D2 FUTURE OPTICS LEVEL"; a one character numeric field.

VAR267; cc 55; "D2 USED LASERS LEVEL"; a one character numeric field.

VAR268; cc 56; "D2 NEEDED LASERS LEVEL"; a one character numeric field.

VAR269; cc 57; "D2 FUTURE LASERS LEVEL"; a one character numeric field.

VAR270; cc 58; "D2 USED COLLECTION SYSTEMS LEVEL"; a one character numeric field.

VAR271; cc 59; "D2 NEEDED COLLECTION SYSTEMS LEVEL"; a one character numeric field.

VAR272; cc 60; "D2 FUTURE COLLECTION SYSTEMS LEVEL"; a one character numeric field.

VAR273; cc 61; "SPECIAL CASE FLAG"; a one character numeric field. Only one of two different values was coded in this field: "0" indicated no special handling was required of this case; "1" indicated special external handling was required of this case. VAR273 had the same purpose as VAR207 except that it came later chronologically in the project.

[Note: card columns 62-73 were unused blanks.]

VAR274; cc 74; "DELPHI RESPONSE VALIDITY CODE"; a one character numeric field. Only one of two different values was coded in this field: "0" indicated that the information contained in this card was not a response to the DELPHI Questionnaire, but only a dummy record generated by the file generation program; "1" indicated that the information contained was a valid response to the questionnaire. A "0" implied VAR213 through VAR272 were "9's".

VAR275; cc 75-76; "CARD NUMBER 8-04 SUBCARD NUMBER"; a two character numeric right-justified field with leading zeroes. Always equalled "04" for this card.

VAR276; cc 77-79; "CARD NUMBER 8-04 SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR276 equalled VAR008, VAR023, VAR059, VAR067, VAR075, VAR081, VAR085, VAR135, VAR185, and VAR211 in all cases.

VAR277; cc 80; "CARD EIGHT, SUB-CARD 04, CARD NUMBER"; a one character numeric field. The only valid entry for this field was the number "8".

Card Number Eight, Sub-card Number 05:

VAR278; cc 1; "D2 USED THREAT/NET ASSESSMENT LEVEL"; a one character numeric field.

VAR279; cc 2; "D2 NEEDED THREAT/NET ASSESSMENT LEVEL"; a one character numeric field.

VAR280; cc 3; "D2 FUTURE THREAT/NET ASSESSMENT LEVEL"; a one character numeric field.

VAR281; cc 4; "D2 USED NATIONAL SECURITY/INTELLIGENCE ORGANIZATION LEVEL"; a one character numeric field.

VAR282; cc 5; "D2 NEEDED NATIONAL SECURITY/INTELLIGENCE ORGANIZATION LEVEL"; a one character numeric field.

VAR283; cc 6; "D2 FUTURE NATIONAL SECURITY/INTELLIGENCE ORGANIZATION LEVEL"; a one character numeric field.

VAR284; cc 7; "D2 USED SOVIET NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR285; cc 8; "D2 NEEDED SOVIET NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR286; cc 9; "D2 FUTURE SOVIET NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR287; cc 10; "D2 USED SOVIET AIR FORCES STUDIES LEVEL"; a one character numeric field.

VAR288; cc 11; "D2 NEEDED SOVIET AIR FORCES STUDIES LEVEL"; a one character numeric field.

VAR289; cc 12; "D2 FUTURE SOVIET AIR FORCES STUDIES LEVEL"; a one character numeric field.

VAR290; cc 13; "D2 USED SOVIET GROUND FORCES STUDIES LEVEL"; a one character numeric field.

VAR291; cc 14; "D2 NEEDED SOVIET GROUND FORCES STUDIES LEVEL"; a one character numeric field.

VAR292; cc 15; "D2 FUTURE SOVIET GROUND FORCES STUDIES LEVEL"; a one character numeric field.

VAR293; cc 16; "D2 USED SOVIET STRATEGIC ROCKET TROOPS STUDIES LEVEL"; a one character numeric field.

VAR294; cc 17; "D2 NEEDED SOVIET STRATEGIC ROCKET TROOPS STUDIES LEVEL"; a one character numeric field.

VAR295; cc 18; "D2 FUTURE SOVIET STRATEGIC ROCKET TROOPS STUDIES LEVEL"; a one character numeric field.

VAR296; cc 19; "D2 USED SOVIET MERCHANT/FISHING/OCEANOGRAPHIC STUDIES LEVEL"; a one character numeric field.

VAR297; cc 20; "D2 NEEDED SOVIET MERCHANT/FISHING/OCEANOGRAPHIC STUDIES LEVEL"; a one character numeric field.

VAR298; cc 21; "D2 FUTURE SOVIET MERCHANT/FISHING/OCEANOGRAPHIC STUDIES LEVEL"; a one character numeric field.

VAR299; cc 22; "D2 USED UNITED STATES NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR300; cc 23; "D2 NEEDED UNITED STATES NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR301; cc 24; "D2 FUTURE UNITED STATES NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR302; cc 25; "D2 USED UNITED STATES NON-NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR303; cc 26; "D2 NEEDED UNITED STATES NON-NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR304; cc 27; "D2 FUTURE UNITED STATES NON-NAVAL FORCES STUDIES LEVEL"; a one character numeric field.

VAR305; cc 28; "D2 USED ALLIED CAPABILITY STUDIES LEVEL"; a one character numeric field.

VAR306; cc 29; "D2 NEEDED ALLIED CAPABILITY STUDIES LEVEL"; a one character numeric field.

VAR307; cc 30; "D2 FUTURE ALLIED CAPABILITY STUDIES LEVEL"; a one character numeric field.

VAR308; cc 31; "D2 USED ADP SYSTEM DESIGN/ANALYSIS LEVEL"; a one character numeric field.

VAR309; cc 32; "D2 NEEDED ADP SYSTEM DESIGN/ANALYSIS LEVEL"; a one character numeric field.

VAR310; cc 33; "D2 FUTURE ADP SYSTEM DESIGN/ANALYSIS LEVEL"; a one character numeric field.

VAR311; cc 34; "D2 USED ADP HARDWARE OPERATIONS LEVEL"; a one character numeric field.

VAR312; cc 35; "D2 NEEDED ADP HARDWARE OPERATIONS LEVEL"; a one character numeric field.

VAR313; cc 36; "D2 FUTURE ADP HARDWARE OPERATIONS LEVEL"; a one character numeric field.

VAR314; cc 37; "D2 USED ADP PROGRAMMING LEVEL"; a one character numeric field.

VAR315; cc 38; "D2 NEEDED ADP PROGRAMMING LEVEL"; a one character numeric field.

VAR316; cc 39; "D2 FUTURE ADP PROGRAMMING LEVEL"; a one character numeric field.

VAR317; cc 40; "D2 USED BASIC ADP INTERFACE OPERATIONS LEVEL"; a one character numeric field.

VAR318; cc 41; "D2 NEEDED BASIC ADP INTERFACE OPERATIONS LEVEL"; a one character numeric field.

VAR319; cc 42; "D2 FUTURE BASIC ADP INTERFACE OPERATIONS LEVEL"; a one character numeric field.

VAR320; cc 43; "D2 USED MANAGEMENT BY OBJECTIVES LEVEL"; a one character numeric field.

VAR321; cc 44; "D2 NEEDED MANAGEMENT BY OBJECTIVES LEVEL"; a one character numeric field.

VAR322; cc 45; "D2 FUTURE MANAGEMENT BY OBJECTIVES LEVEL"; a one character numeric field.

VAR323; cc 46; "D2 USED PERSONNEL MANAGEMENT LEVEL"; a one character numeric field.

VAR324; cc 47; "D2 NEEDED PERSONNEL MANAGEMENT LEVEL"; a one character numeric field.

VAR325; cc 48; "D2 FUTURE PERSONNEL MANAGEMENT LEVEL"; a one character numeric field.

VAR326; cc 49; "D2 USED FINANCIAL MANAGEMENT LEVEL"; a one character numeric field.

VAR327; cc 50; "D2 NEEDED FINANCIAL MANAGEMENT LEVEL"; a one character numeric field.

VAR328; cc 51; "D2 FUTURE FINANCIAL MANAGEMENT LEVEL"; a one character numeric field.

VAR329; cc 52; "D2 USED NATIONAL/NAVAL BUDGET MANAGEMENT LEVEL"; a one character numeric field.

VAR330; cc 53; "D2 NEEDED NATIONAL/NAVAL BUDGET MANAGEMENT LEVEL"; a one character numeric field.

VAR331; cc 54; "D2 FUTURE NATIONAL/NAVAL BUDGET MANAGEMENT LEVEL"; a one character numeric field.

VAR332; cc 55; "D2 USED LABOR RELATIONS MANAGEMENT LEVEL"; a one character numeric field.

VAR333; cc 56; "D2 NEEDED LABOR RELATIONS MANAGEMENT LEVEL"; a one character numeric field.

VAR334; cc 57; "D2 FUTURE LABOR RELATIONS MANAGEMENT LEVEL"; a one character numeric field.

VAR335; cc 58; "D2 USED BRIEFING SKILLS LEVEL"; a one character numeric field.

VAR336; cc 59; "D2 NEEDED BRIEFING SKILLS LEVEL"; a one character numeric field.

VAR337; cc 60; "D2 FUTURE BRIEFING SKILLS LEVEL"; a one character numeric field.

VAR338; cc 61; "D2 USED WRITING SKILLS LEVEL"; a one character numeric field.

VAR339; cc 62; "D2 NEEDED WRITING SKILLS LEVEL"; a one character numeric field.

VAR340; cc 63; "D2 FUTURE WRITING SKILLS LEVEL"; a one character numeric field.

VAR341; cc 64; "D2 USED ORGANIZATION OF THOUGHT LEVEL"; a one character numeric field.

VAR342; cc 65; "D2 NEEDED ORGANIZATION OF THOUGHT LEVEL"; a one character numeric field.

VAR343; cc 66; "D2 FUTURE ORGANIZATION OF THOUGHT LEVEL"; a one character numeric field.

[Note: card columns 67-73 were unused blanks.]

VAR344; cc 74; "DELPHI RESPONSE VALIDITY CODE"; a one character numeric field. Only one of two different values was coded in this field. "0" indicated that the information contained in this card was not a response to the DELPHI Questionnaire, but only a dummy record generated by the file generation program; "1" indicated that the information contained was a valid response to the questionnaire. A "0" implied VAR278 through VAR343 were "9's".

VAR345; cc 75-76; "CARD NUMBER 8-05 SUBCARD NUMBER"; a two character numeric right-justified field with leading zeroes. Always equalled "05" for this card.

VAR346; cc 77-79; "CARD NUMBER 8-05 SEQUENCE (CASE) NUMBER"; a three character numeric right-justified field with leading zeroes. VAR346 equalled VAR008, VAR023, VAR059, VAR067, VAR075, VAR081, VAR085, VAR135, VAR185, VAR211, and VAR276 in all cases.

VAR347; cc 80; "CARD EIGHT, SUB-CARD 05, CARD NUMBER"; a one character numeric field. The only valid entry for this field was the number "8".

TABLE D-1

LIST OF VALID UNIT IDENTIFICATION CODES WITH ADDRESSES IN ALPHABETIC ORDER

	ASSIGNED UIC	COMMAND NAME
1.	99910	Attn: U.S. Documents Officer Commander in Chief Eastern Atlantic Area APO New York 09218
2.	96013	Center for Naval Analyses 1401 Wilson Blvd. Arlington, Virginia 22209
3.	62982	Chief Navy Advisory Group U.S. Military Assistance Command, Thailand APO San Francisco 96346
4.	99936	Chief of Naval Operations (Attn: OP009F) 1401 Wilson Blvd. Arlington, Virginia 22209
5.	99939	Commandant Defense Intelligence School Washington, D.C. 20301
6.	63842	Commander Antilles Defense Command FPO New York 09551
7.	65792	Commander Atlantic Command Electronic Intelligence Center Norfolk, Virginia 23511
8.	62919	Commander Caribbean Sea Frontier FPO New York 09551
9.	99923	Commander Cruiser Destroyer Group 12 FPO New York 09501

10.	99922	Commander Cruiser Destroyer Group 8 FPO New York 09501
11.	62928	Commander Eastern Sea Frontier Flushing and Washington Avenue Brooklyn, New York 11251
12.	99929	Commander Fighter/Airborne Early Warning Wing Pacific Naval Air Station Miramar San Diego, California 92145
13.	09117	Commander Fleet Air Keflavik Box 2 FPO New York 09571
14.	09550	Commander Fleet Air Mediterranean FPO New York 09521
15.	09946	Commander Fleet Air Reconnaissance Squadron Two FPO New York 09501
16.	09930	Commander Fleet Air Reconnaissance Squadron One FPO San Francisco 96601
17.	57014	Commander Iceland Defense Force Box 1 FPO New York 09571
18.	09519	Commander Medium Attack Wing One Naval Air Station Oceana Virginia Beach, Virginia 23460
19.	00015	Commander Naval Intelligence Command Naval Intelligence Command Hqtrs 2461 Eisenhower Avenue Alexandria, Virginia 22331

20.	63013	Commander NUWPNTRAGRUPAC Naval Air Station North Island San Diego, California 92135
21.	99908	Commander Patrol Wing One FPO Seattle 98768
22.	05917	Commander Patrol Wings Pacific Naval Air Station Moffett Field, California 94035
23.	99930	Commander Reconnaissance Attack Wing 1 Naval Air Station Albany, Georgia 31703
24.	99914	Commander Task Force 168 Hoffman Building 1 2461 Eisenhower Avenue Alexandria, Virginia 22331
25.	99935	Commander Task Force 72 FPO Seattle 98762
26.	31585	Commander U. S. Forces Korea APO San Francisco 96301
27.	99934	Commander U. S. Naval Forces Philippines FPO San Francisco 96650
28.	57006	Commander U. S. Naval Forces Japan FPO Seattle 98762
29.	62894	Commander U. S. Naval Forces Korea APO San Francisco 96301
30.	62822	Commander U. S. Taiwan Defense Command APO San Francisco 96263

31.	57015	Commander Amphibious Forces U. S. Atlantic Fleet Norfolk, Virginia 23520
32.	57019	Commander Amphibious Forces U. S. Pacific Fleet San Diego, California 92155
33.	55297	Commander Amphibious Squadron 1 FPO San Francisco 96601
34.	55335	Commander Amphibious Squadron 3 FPO San Francisco 96601
35.	55269	Commander Amphibious Squadron 5 FPO San Francisco 96601
36.	55281	Commander Amphibious Squadron 7 FPO San Francisco 96601
37.	99901	Commander Carrier Group 1 FPO San Francisco 96601
38.	99902	Commander Carrier Group 2 FPO New York 09501
39.	99903	Commander Carrier Group 3 FPO San Francisco 96601
40.	99904	Commander Carrier Group 4 FPO New York 09501
41.	99905	Commander Carrier Group 5 FPO San Francisco 96601
42.	99906	Commander Carrier Group 6 FPO New York 09501
43.	99907	Commander Carrier Group 7 FPO San Francisco 96601
44.	99911	Commander in Chief Alaska APO Seattle 98742
45.	00066	Commander in Chief Atlantic Naval Base Norfolk, Virginia 23511

46.	00038	Commander in Chief Pacific FPO San Francisco 96610
47.	00060	Commander in Chief U. S. Atalantic Fleet Norfolk, Virginia 23511
48.	00061	Commander in Chief U. S. Naval Forces Europe FPO New York 09501
49.	00070	Commander in Chief U. S. Pacific Fleet FPO San Francisco 96610
50.	99909	Commander in Chief U. S. Southern Command APO New York 09826
51.	57007	Commander Middle East Force FPO New York 09501
52.	57012	Commander Naval Air Force U. S. Atlantic Fleet Naval Air Station Norfolk, Virginia 23511
53.	57025	Commander Naval Air Force U. S. Pacific Fleet Box 1210 Naval Air Sta., North Island San Diego, California 92135
54.	63981	Commander Patrol Wings Atlantic Naval Air Station Brunswick, Maine 04011
55.	08961	Commander Second Fleet FPO New York 09501
56.	57024	Commander Seventh Fleet FPO San Francisco 96601
57.	57042	Commander Sixth Fleet FPO New York 09501
58.	57016	Commander Submarine Force U. S. Atlantic Fleet Norfolk, Virginia 23511

59.	57020	Commander Submarine Force U. S. Pacific Fleet FPO San Francisco 96610
60.	99926	Commander Submarine Group 5 Fleet Station Post Office San Diego, California 92132
61.	99927	Commander Submarine Group 7 Box 50 FPO Seattle 98762
62.	99928	Commander Submarine Group 8 Box 104 FPO New York 09524
63.	57087	Commander Third Fleet FPO San Francisco 96610
64.	00510	Commander U. S. Naval Forces Southern Command FPO New York 09580
65.	65134	Commander U. S. N. Element PACOMELINT Center Box 525, Terminal Navy PO FPO San Francisco 96610
66.	99931	Commanding Officer Fleet Composite Squadron 1 FPO San Francisco 96601
67.	99913	Commanding Officer Fleet Intelligence Center Europe and Atlantic Norfolk, Virginia 23511
68.	63186	Commanding Officer Fleet Intelligence Center Pacific FPO San Francisco 96610
69.	99912	Commanding Officer Fleet Intelligence Center Europe Box 18, Naval Air Station Jacksonville, Florida 32212
70.	99918	Commanding Officer Fleet Intelligence Training Center Atlantic Bldg SP 234, NAS Norfolk, Virginia 23511

71.	99919	Commanding Officer Fleet Intelligence Training Center Pacific Bldg 5, Fleet ASW School San Diego, California 92147
72.	99925	Commanding Officer ELTCORGRU Two Naval Amphibious Base Little Creek Norfolk, Virginia 23520
73.	99933	Commanding Officer Intelligence Center Pacific Box 38 FPO San Francisco 96610
74.	60200	Commanding Officer Naval Air Station Cecil Field, Florida 32215
75.	99932	Commanding Officer Naval Amphibious School Coronado San Diego, California 92155
76.	31695	Commanding Officer Naval Command Systems Support Activity Washington Navy Yard Washington, D. C. 20390
77.	63420	Commanding Officer Naval Intelligence Processing System Support Activity 2461 Eisenhower Avenue Alexandria, Virginia 22331
78.	66400	Commanding Officer Naval Intelligence Processing System Training Facility Naval Air Station Albany Albany, Georgia 31703
79.	68166	Commanding Officer Naval Intelligence Support Center 4301 Suitland Road Washington, D. C. 20390
80.	63064	Commanding Officer Naval Investigative Service Office Hawaii Box 122 FPO San Francisco 96610

81.	63055	Commanding Officer Naval Investigative Service Office Norfolk Norfolk, Virginia 23511
82.	63053	Commanding Officer Naval Investigative Service Office NORLA P. O. Box 6438 New Orleans, Louisiana 70174
83.	63057	Commanding Officer Naval Investigative Service Office San Diego P. O. Box 10666 San Diego, California 92110
84.	63058	Commanding Officer Naval Investigative Service Office San Francisco Building 7, Treasure Island San Francisco, California 94130
85.	63285	Commanding Officer Naval Investigative Service Headquarters 2461 Eisenhower Avenue Alexandria, Virginia 22314
86.	63054	Commanding Officer Naval Investigative Service Office New York Flushing and Washington Avenue Brooklyn, New York 11251
87.	63051	Commanding Officer Naval Investigative Service Naval Base Charleston, South Carolina 29408
88.	63126	Commanding Officer Naval Missile Center Point Mugu, California 93042
89.	62769	Commanding Officer [NS Subic] U. S. Naval Station FPO San Francisco 96651
90.	99921	Commanding Officer [NISO Marianas] U. S. Naval Investigative Service Office P. O. Box 164 FPO San Francisco 96630

91.	62856	Commanding Officer [NAF Lajes] U. S. Naval Air Facility APO New York 09406
92.	65493	Commanding Officer [NIS Europe] U. S. Naval Investigative Service Office Box 11 FPO New York 09510
93.	99920	Commanding Officer [NISO Japan] U. S. Naval Investigative Service Office Box 76 FPO Seattle 98762
94.	00309	Commanding Officer [NS GTMO] U. S. Naval Station Box 25 FPO New York 09593
95.	03366	Commanding Officer USS AMERICA (CVA66) FPO New York 09501
96.	05840	Commanding Officer USS BLUE RIDGE (LCC 19) FPO San Francisco 96601
97.	03364	Commanding Officer USS CONSTELLATION (CVA 43) FPO San Francisco 96601
98.	03343	Commanding Officer USS CORAL SEA (CVA 34) FPO San Francisco 96601
99.	03365	Commanding Officer USS ENTERPRISE (CVAN 65) FPO San Francisco 96601
100.	03342	Commanding Officer USS F D ROOSEVELT (CVA 42) FPO New York 09501
101.	03359	Commanding Officer USS FORRESTAL (CVA 59) FPO New York 09501
102.	03321	Commanding Officer USS HANCOCK (CVA 19) FPO San Francisco 96601

103.	03362	Commanding Officer USS INDEPENDENCE (CV 62) FPO New York 09501
104.	03367	Commanding Officer USS JOHN F KENNEDY (CVA 67) FPO New York 09501
105.	03363	Commanding Officer USS KITTY HAWK (CV 63) FPO San Francisco 96601
106.	03341	Commanding Officer USS MIDWAY (CVA 41) FPO San Francisco 96601
107.	20001	Commanding Officer USS MT WHITNEY (LCC 20) FPO New York 09501
108.	03334	Commanding Officer USS ORISKANY (CVA 34) FPO San Francisco 96601
109.	03361	Commanding Officer USS RANGER (CVA 61) FPO San Francisco 96601
110.	03360	Commanding Officer USS SARATOGA (CV 60) FPO New York 09501
111.	64591	Deputy Director Strategic Target Planning Offutt Air Force Base Nebraska 68113
112.	99943	Director Defense Intelligence Agency (Alternate National Military Command Center) Washington, D. C. 20301
113.	99940	Director Defense Intelligence Agency (Arlington Hall Station) Washington, D. C. 20301
114.	99945	Director Defense Intelligence Agency (Canadian Defense Headquarters) Washington, D. C. 20301

115.	99944	Director Defense Intelligence Agency (National Emergency Airborne Command Post) Washington, D. C. 20301
116.	99946	Director Defense Intelligence Agency (National Mil Intell Center) Washington, D. C. 20301
117.	99942	Director Defense Intelligence Agency (National Security Agency) Washington, D. C. 20301
118.	99938	Director Defense Intelligence Agency (Pomponio Plaza) Washington, D. C. 20301
119.	99941	Director Defense Intelligence Agency (Washington Navy Yard) Washington, D. C. 20301
120.	63415	Director Defense Intelligence Agency Washington, D. C. 20301
121.	30883	Director Naval Ocean Surveillance Information Center 4301 Suitland Road Washington, D. C. 20390
122.	99917	Officer in Charge EURFAST (TG168.3) Box 24 FPO New York 09521
123.	66600	Officer in Charge [FOSIF Rota] Fleet Ocean Surveillance Information Facility FPO New York 09540
124.	66842	Officer in Charge [FOSIC London] Fleet Ocean Surveillance Information Center FPO New York 09510

125.	66967	Officer in Charge Fleet Ocean Surveillance Information Center Norfolk, Virginia 23511	
126.	66970	Officer in Charge Fleet Ocean Surveillance Information Facility FPO Seattle 98768	[FOSIF WPAC]
127.	99916	Officer in Charge LANTFAST (TG168.2) CINCLANT Compound Norfolk, Virginia 23511	
128.	62930	Officer in Charge Navy Field Operational Intelligence Office Fort George G. Meade Maryland 20755	
129.	99937	Officer in Charge NFOIO (Friendship Annex) Fort George G. Meade Maryland 20755	
130.	99915	Officer in Charge PACFAST (TG168.1) CINCPACFLT, Box 14 FPO San Francisco 96610	

TABLE D-2

List of Valid CONUS/OVERSEAS Codes

The following lists and defines those values which were coded in card column 73 of the first card of the data base. VAR005 is the variable number associated with this field.

"0" = command is located within the continental United States.

"1" = command is located on the European continent or on land in proximity to the European continent (e.g., Iceland).

"2" = command is located ashore in an area surrounding the Pacific Ocean.

"3" = command is an afloat command operating in either the Atlantic Ocean or the Mediterranean.

"4" = command is an afloat command operating in the Pacific Ocean.

TABLE D-3

List of Valid State and Country Codes

The following lists and defines those values which were coded in card columns 74-75 of the first card of the data base. VAR006 is the variable number associated with this field.

"AF" = any afloat command
"AK" = Alaska
"AZ" = Azores
"CA" = California
"CN" = Nationalist China
"CZ" = Panama Canal Zone
"DC" = Washington, D.C.
"FL" = Florida
"GM" = Guam
"GT" = Guantanamo Bay, Cuba
"HI" = Hawaii
"IC" = Iceland
"IT" = Italy
"JP" = Japan
"KO" = Korea
"LA" = Louisiana
"MA" = Marianas Islands
"MD" = Maryland
"ME" = Maine
"NB" = Nebraska
"NY" = New York
"PA" = Pennsylvania
"PI" = Philippine Islands
"PR" = Peurto Rico
"SC" = South Carolina
"SP" = Spain
"TH" = Thailand
"UK" = United Kingdom
"VA" = Virginia

TABLE D-4

List of Valid Researcher Code Numbers

The following lists and defines those values which were coded in card column 76 of the first card of the data base. VAR007 is the variable number associated with this field.

"1" = Lieutenant Commander D. L. Mount

"2" = Lieutenant W. I. Foster

"3" = Lieutenant N. M. Bickell

"4" = Lieutenant E. W. Huber, Jr.

"5" = Lieutenant T. R. Watson

TABLE D-5

List of Valid Respondent Rank Codes

The following lists and defines those values which were coded in card column 41 of the second card of the data base. VAR011 is the variable number associated with this field.

"1" = respondent was a civilian

"3" = respondent was a lieutenant (paygrade 0-3)

"4" = respondent was a lieutenant commander (paygrade 0-4)

"5" = respondent was a commander (paygrade 0-5)

"6" = respondent was a captain (paygrade 0-6)

TABLE D-6

List of Valid Respondent Educational Level Codes

The following lists and defines those values which were coded in card column 66 of the second card of the data base. VAR018 is the variable number associated with this field.

"0" = respondent had less than a bachelors degree.

"1" = respondent had a bachelors degree or equivalent.

"2" = respondent had a bachelors degree plus some post-graduate studies, or equivalent, but did not have a masters degree or equivalent.

"4" = respondent had a masters degree, or equivalent.

"5" = respondent had a doctoral level degree.

The Defense Intelligence School, or its predecessor the Naval Intelligence School, did not qualify under the definition given to a bachelors or masters level education.

TABLE D-7

List of Valid Respondent Training Codes

The following lists and defines those values which were coded in card columns 67-71 of the second card of the data base. VAR019 is the variable number associated with this field.

"1" = respondent had previous intelligence related experience.

"2" = respondent had previous military experience (other than intelligence related).

"3" = respondent had attended the Defense Intelligence School or its predecessor, the Naval Intelligence School.

"4" = respondent had photographic interpretation or photographic experience.

"5" = respondent had attended intelligence training courses such as those given at the Fleet Intelligence Training Centers or at Lowry Air Force Base.

"6" = respondent had foreign language training (source of the training was not important).

"7" = respondent had automatic data processing experience or training related to automatic data processing.

"8" = respondent had obtained professional military education (as opposed to civilian education), but no degree program was associated with the education. Examples included the various war and staff colleges.

"9" = respondent had professional training (as opposed to education) other than intelligence related training. Examples included nuclear weapons/nuclear technology training, the Fleet Anti-Air Warfare Training Centers, etc.

TABLE D-8

List of Valid Additional Output Codes

The following lists and defines those values which were coded in columns 33-35 of cards four, five, and six, and in columns 71-73 of cards four and five of the data base. VAR062, VAR065, VAR070, VAR073, and VAR078 are the variable numbers associated with these fields.

"A" = administration of an intelligence office.
"B" = resource and organizational management.
"C" = budgeting and fiscal planning.
"D" = decisions and recommendations.
"E" = briefs and debriefs.
"F" = liaison.
"G" = charts and audio-visual aids.
"H" = counterintelligence studies.
"I" = data analysis.
"J" = estimates.
"K" = intelligence annexes to operation orders.
"L" = intelligence collection plans.
"M" = intelligence collection tasking.
"N" = Intelligence Information Reports.
"O" = interface with automatic data processing and telecommunications.
"P" = orders-of-battle.
"Q" = physical security.
"R" = tactical plots.
"S" = non-intelligence related outputs.
"T" = counseling and training.

TABLE D-9

List of Valid Educational Level Rating Codes

The following lists and defines those values which were coded for the interview and DELPHI Questionnaire educational proficiency level codes. Variable number associated with this coding scheme included: VAR087 through VAR132, VAR137 through VAR182, VAR213 through VAR272, and VAR278 through VAR343.

"1" = That academic pursuit was either not needed or not used.

"2" = That academic pursuit was required or used at a "Basic Knowledge" level, i.e., having general acquaintance with major concepts, capabilities, and limitations.

"3" = That academic pursuit was required or used at a "Working Knowledge" level, i.e., sufficiently familiar to be able to communicate effectively with an expert regarding both a problem and a solution, but not necessarily able actually to work a complex problem without supervision and outside assistance.

"4" = That academic pursuit was required or used at an "Expert or Theoretical" level, i.e., possessed knowledge which allowed one to conceptualize and execute the steps required to provide solutions.

TABLE D-10

List of Valid Interview Data Academic Codes

The following lists and defines those values which were used in various data fields to represent the different educational areas. The first two digits represented a general academic pursuit and the single digit after the decimal point represented a specific subset of the associated academic pursuit.

Mathematics Series (01.x):

01.1 College Algebra
01.2 Beginning Calculus
01.3 Probability and Statistics
01.4 Advanced Calculus

Foreign Language Series (02.x):

02.1 Foreign Language (language not specified)

Area Studies (03.x):

03.1 USSR
03.2 Peoples Republic of China
03.3 Middle East
03.4 Europe
03.5 Latin America
03.6 Africa

Operations Analysis Series (04.x):

04.1 Operations Analysis

International Relations Theory (05.x):

05.1 International Relations

Naval Science Series (06.x):

06.1 Underwater Acoustics
06.2 Sonar Systems
06.3 Communication Systems
06.4 Radar Systems
06.5 Optics
06.6 Lasers
06.7 Collection Systems

National Security Series (07.x):

07.1 National and Naval Budgetary Process
07.2 Threat and Net Assessment
07.3 National Security and Intelligence Organization

Soviet Forces Studies (08.x):

08.1 Naval
08.2 Air Force
08.3 Ground
08.4 PVO
08.5 Strategic Rocket Troops
08.6 Merchant/Fishing/Oceanographic Operations

Blue Forces Studies (09.x):

09.1 Collection Systems
09.2 Naval Forces
09.3 Non-Naval Forces
09.4 Allied Capability

Automatic Data Processing Series (10.x):

10.1 System Design/Analysis/Management
10.2 Hardware Operations
10.3 Software Operations (Programming)
10.4 Basic Interface Operations

Communication Skills (11.x):

11.1 Briefing
11.2 Writing
11.3 Organization of Thought

Management Series (12.x):

12.1 Collection Systems
12.2 PERT
12.3 Management by Objectives
12.4 Personnel
12.5 Financial
12.6 Labor Relations

APPENDIX E

BASIC DATA BASE FILE STRUCTURE, INCLUDING THE ALGOL/FORTRAN LINKAGE, ANCILLARY DATA BASE FILES, DATA FILE VALIDATION, AND THE DATA FILE GENERATION CHRONOLOGY

BASIC DATA BASE FILE STRUCTURE

A. UNIFORMITY IN THE VARIABLE LABELLING SYSTEM

One of the advantages in having chosen the Statistical Package for the Social Sciences [SPSS] analysis programs was the ease of labelling the variables. All variables were assigned a sequential number to identify each field within the input stream. As an example, the first variable was VAR001, followed by VAR002, etc. Even though there was no immediate correlation between the variable label and the meaning of the variable, there were inherent coding advantages. Two advantages were the simplified variable declaration statements required by SPSS, and a relative chronological and spatial connotation within the data base.

In order to make as uniform a data base structure as possible, this sequential variable coding scheme was maintained throughout all programs with only one slight modification. The ALGOL compiler did not recognize differences in a numeric card image input stream unless there was at least one blank space between fields. To conserve data card space, blank spaces between numeric fields were not included. To alleviate

this problem, the ALGOL input stream was read as an 80 column alphanumeric stream and then each numeric field was converted character-by-character from its alphabetic decimal representation to its numeric integer equivalent. In general, both the alphabetic version and the numeric conversion of each transformed variable were in core simultaneously. The numeric version retained the "standardized" variable label similar to the SPSS definition, i.e., VAR043 was a numeric variable in both the SPSS definition and the ALGOL data definition module. The unconverted alphabetic input stream variables were similarly numbered, but appended with the letter "A", i.e., the variables' alphanumeric version. Alphabetic variables required no conversion and no "A" was appended to the variable label. Hence, VAR001 was an alphabetic variable in both SPSS and in ALGOL; VAR043 was also a numeric variable in both SPSS and in ALGOL, but VAR043A was the ALGOL unconverted alphanumeric equivalent of the ALGOL variable VAR043.

B. THE DATA BASE MODULE

Numerous references are made to the ALGOL data base definition module. This module was simply the collectivity of the standardized variable declarations used throughout all ALGOL source programs. The initial data base declaration cards were physically reproduced and inserted in each program which accessed those data cards — another step toward uniformity throughout the entire project.

C. THE BASIC DATA BASE DECLARATION MODULE

To generate the initial data base file, the first iteration of DELPHI A, dated 19 August 1974 [Appendix B, Sample A], was transferred, field by field, to the coding sheet exhibited in Appendix B, Sample B. Data control and coder information variables were added to make the data base fully responsive to any form of data retrieval and to allow for regeneration in case of catastrophic failure. The most important control variables were the sequence or case number, and the card number. These two variables were punched in columns 77-79 and column 80, respectively, in each card to allow for card sorting and case identification. This initial questionnaire consumed seven cards; these seven cards became the basic data base. They were then mechanically sorted in ascending order by card number within sequence number and then placed on the Model 2311 disk for validation, printing, and analysis. This file of seven cards per case was labelled QCARDS for JCL purposes. Appendix D contains a list of the types of information coded for each variable.

D. SPECIAL CODING CONVENTIONS FOR CERTAIN ALPHABETIC FIELDS

Several variables were designed and coded specifically for the purpose of using the upper and lower printing capability of the Model 1403 high speed chain printer. The Text Processing System (TPS) program subroutines mentioned previously were designed to facilitate this printer option. In order to key certain special operating parameters and to control

upper/lower case printing, TPS reserved several seldom used characters for internal flagging. Of coding interest were the "/" and the "-" characters. The "/" was the special flag to shift printer case; if the "TN" print chain were set to lower case, then a "/" immediately preceding a letter shifted [only] that next letter to upper case, and vice versa. The "-" character was utilized in conjunction with specified one or two character fields to control printer operating parameters. To take full advantage of the TPS program, these special characters had to be used judiciously.

The "-" character was excluded entirely from use in the following alphabetic fields: VAR001 (command name), VAR003 (billet title), VAR010 (respondent's name), VAR061 (first additional output wording), VAR064 (second additional output wording), VAR069 (third additional output wording), VAR072 (fourth additional output wording), and VAR077 (fifth additional output wording).

The respondent's name, VAR010, was especially coded to include the "/" character. Because some respondents submitted only their last names and since some last names were two separate words, some means for controlling "non-standard" last name situations also had to be included in the coding scheme. It was decided that a "#" character would be used as the flag to indicate that the name variable contained only the respondent's last name, or that a double-worded last name existed. Surname suffixes were included on several of the

questionnaire forms. Hence, "Jr.", "II", and "III" were also included in the name variable. For these reasons, coding all the possible name permutations (VAR010) became a programmer's nightmare. The best way to explain this coding scheme is to provide several examples to show the different formats. A "standard" name was coded thus: "/JOHN /T. /JONES"; "non-standard" name examples are:

/JOHN /T. /JONES, /JR.,

/J. /T. /JONES, /I/I/I,

#/JOHNSON,

/J. /T.#/MC /DONALD,

/A. /B.#/MC /ADOO, /I/I, and

#/MC /DONALD.

ALGOL/FORTRAN LINKAGE UNDER OS360/MVT CONTROL

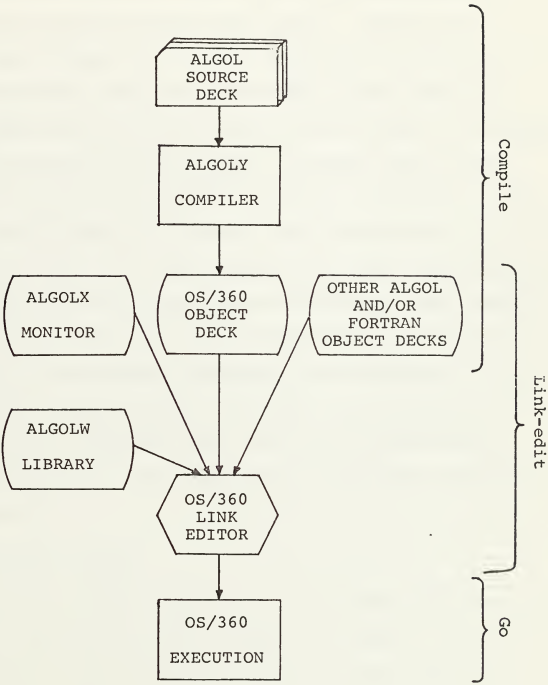
A. BACKGROUND

One of the accomplishments of this project was the successful, extensive use of linked ALGOL W programs with FORTRAN subroutines in execution core of the 360 computer. The need for this unusual arrangement arose from inherent limitations in the Stanford University version of the ALGOL compiler, which was available at the Naval Postgraduate School. The Stanford version of the ALGOL compiler was the 16 January 1972 version, as modified for local operating conditions, and was used throughout the project. Further use of the words ALGOL, ALGOLW, ALGOLX, and ALGOLY refer to that specific compiler.

A detailed description of the procedures to be followed and the limitations on such linkages are provided. The discussion applies specifically to the Naval Postgraduate School computer installation and presumes the reader is familiar with: (a) the IBM OS360/MVT operating environment, i.e., job control language [JCL]; (b) the standard IBM FORTRAN IV compiler; and (c) the Stanford ALGOL compiler. The reader is directed to the ALGOL W Reference Manual by Sites, pages 107 through 110.3 for a refresher in general ALGOL linkage design. The following discussion and Figure E-1 draw heavily upon that reference as well as the experience gained in the operationalization of the linkages.

FIGURE E-1

ALGOL COMPILE/LINK-EDIT/GO SEQUENCE



B. SUMMARY OF THE ALGOL LINKAGE DESIGN

There are two versions of the ALGOLW compiler; both use exactly the same execution code for the various phases of the compiler and for the run-time library. However, the monitor phase [ALGOLX] is slightly different for the two execution modules. The compile/load/go in-core version is called ALGOLW and is not the version which allowed for linkage with the separately compiled ALGOL or FORTRAN object decks. The compile only version [ALGOLY] produces a standard OS/360 object deck only and is the version used to allow for a linkage. In fact, this object deck output from ALGOLY can be link-edited with other object decks produced by other ALGOLY compilations as well as by standard FORTRAN IV compilations. In order to be executable, the object decks must be link-edited with the ALGOL library, the ALGOL run-time monitor [ALGOLX], and, if FORTRAN object decks are co-link-edited, the FORTRAN library. This arrangement is depicted graphically in Figure E-1.

C. THE LINKAGE PROBLEM

This computer/ALGOL combination installation suffered from a JCL inability to pass correctly more than a single ALGOLX monitor control parameter [such as ALGOL execution time limits (PARM.GO='TIME=5'), ALGOL printed page output limits (PARM.GO='PAGES=15'), or ALGOL execution-time core size availability (PARM.GO='SIZE=200K')] to the "GO" step as outlined in the reference manuals. Additionally, the format

was not as provided in the reference manuals, but rather as shown in brackets above. Each reference to time, page, and size limitations refers to the ALGOLX monitor limits and not to those of the normal OS360 limits.

The ALGOLX 'SIZE' parameter had to be overridden in almost every program written for this project because the ALGOLX monitor requests its full default value for core storage [nominally 120K] from the OS360 operating system in the "GO" step. ALGOL never "knows" how much core storage will be required in the execution phase until it is needed. This dynamic core allocation scheme became a Nemesis which resulted from having chosen ALGOL's expanded alphabetic string manipulative ability. The OS360 allocation sequence is as follows: first to the object deck(s) [ALGOL and/or FORTRAN], second to ALGOLX for operating core storage space [for which ALGOL takes all remaining core storage up to the JCL limit], and finally to the FORTRAN deck for input/output buffer space. Since there can never be any remaining core storage for the third allocation step, the result is an OS360 error message which indicates insufficient core availability. Unless and until ALGOL is restricted in its bid for core storage, FORTRAN input/output buffer space will never exist. This is the reason for the 'SIZE' parameter in ALGOL. A problem would not have existed locally had the installation JCL been able to pass the 'SIZE' parameter information correctly into the "GO" step. This it could do only if there were one parameter to be passed.

D. THE LINKAGE PROBLEM SOLUTION

It was necessary to override both 'TIME' and 'SIZE' default parameters in almost every program. To circumvent this local deficiency, a special ALGOLX monitor was created in which the ALGOLX monitor time control functions were completely disabled. This version of the monitor was stored semi-permanently on disk storage. ALGOLX monitor page limitations [nominal default is nine pages] never presented a problem because there never was a need for both the 'SIZE' and the 'PAGE' parameters to be overridden in the same program.

E. INPUT/OUTPUT STANDARDIZATION

In order to simplify the increasingly complex job control language, ALGOLX monitor situation, and the ALGOL/FORTRAN interfacing, a standardized FORTRAN IV G source deck was compiled and the object deck was placed on the SYS003 data disk. This FORTRAN source deck is shown as Figure E-2. The resulting object deck, called FOALG3 [FORTRAN Object deck for ALGOL programs, version 3], was then used uniformly throughout the computerization process. FOALG3 had the ability to read three different input files from any medium ["READ11", "READ12", and "READ13"], to write three different output files on any medium ["RITE14", "RITE15", and "RITE16"], to rewind each of those six logical files ["RWND11", "RWND12", "RWND13", "RWND14", "RWND15", and "RWND16"], and to punch cards ["PUNCH"]. Without exception, all images that were passed between the ALGOL source programs and the FORTRAN subroutines were 80 alphanumeric

FIGURE E-2

FORTRAN SOURCE PROGRAM FOR
STANDARDIZED INPUT/OUTPUT FUNCTIONS

```
//HUFORT JOB (2600,0578,YS42),'HUBER,E.W.'
// EXEC FORTGCD
//FORT.SYSIN DD *
      SUBROUTINE READ11 (ARRAY1)
      DIMENSION ARRAY1 (20)
   11 FORMAT (20A4)
      READ (11,11) ARRAY1
      RETURN
      END
      SUBROUTINE READ12 (ARRAY2)
      DIMENSION ARRAY2 (20)
   12 FOPMAT (20A4)
      READ (12,12) ARRAY2
      RETURN
      END
      SUBROUTINE READ13 (ARRAY3)
      DIMENSION ARRAY3 (20)
   13 FORMAT (20A4)
      READ (13,13) ARRAY3
      RETURN
      END
      SUBROUTINE RITE14 (ARRAY4)
      DIMENSION ARRAY4 (20)
   14 FORMAT (20A4)
      WRITE (14,14) ARRAY4
      RETURN
      END
      SUBROUTINE RITE15 (ARRAY5)
      DIMENSION ARRAY5 (20)
   15 FORMAT (20A4)
      WRITE (15,15) ARRAY5
      RETURN
      END
      SUBROUTINE RITE16 (ARRAY6)
      DIMENSION ARRAY6 (20)
   16 FORMAT (20A4)
      WRITE (16,16) ARRAY6
      RETURN
      END
      SUBROUTINE RWND11
      REWIND 11
      RETURN
      END
      SUBROUTINE RWND12
      REWIND12
      RETURN
      END
      SUBROUTINE RWND13
```

FIGURE E-2 (Continued)

```
      REWIND13
      RETURN
      END
      SUBROUTINE RWND14
      REWIND14
      RETURN
      END
      SUBROUTINE RWND15
      REWIND 15
      RETURN
      END
      SUBROUTINE RWND16
      REWIND 16
      RETURN
      END
      SUBROUTINE PUNCH (ARRAY7)
      DIMENSION ARRAY7 (20)
   20 FORMAT (20A4)
      WRITE (7,20) ARRAY7
      RETURN
      END
```

characters in length. Blocking factors were usually 45:1 which resulted in a 3600 character block size, the maximum allowable for a Model 2311 disk. The 10:1 block size for the standardized FORTRAN subroutine object deck was 800 characters of binary information, the maximum allowable by the OS360 link-editor program.

Advantages of standardization of all input/output functions included: less chance for error in program loading and less time required to read source and object decks at the card reader. One disadvantage of FORTRAN output under ALGOLX control was the inability to close an output file automatically after main program termination. Several solutions were available. The most commonly used approach was to output a sufficient number of blank dummy records just prior to ALGOL termination, thereby forcing any partially filled buffer records onto the output medium. A secondary method was to reduce the block size to equal the record length [i.e., 80 characters]. This prevented the problem entirely but was wasteful of disk storage space. More exotic methods could have been pursued had time permitted.

F. THE GO.FT07F001 DILEMMA

One curious aspect of this functional bootstrap approach to input/output was an inconsistent request by OS360 for a GO.FT07001 data definition card. Even though very few programs called on the FOALG3 subroutine PUNCH, more often than not spurious OS360 error situations and messages were produced and

program execution terminated. The only remedy taken was to add the standard, but "unneeded", GO.FT07F001 data definition card and restart.

G. EXAMPLE JCL DECK

A sample JCL deck including the ALGOL/FORTRAN linkage is explained here. It was used in the generation of the computer-printed DELPHI Questionnaire dated 6 November 1974. The input files were the data base cards [QCARDS] on file 11, the formatted basic letter control deck [DEL1TPS] on file 12, and the address label card file [MAILER] on file 13. The output files were the tailored letter in TPS format on file 14, the large address labels on file 15, and the small address labels on file 16. No cards were punched in this program.

<u>SAMPLE JCL DECK SET-UP</u>

```
        //HUBER3 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=90
  (1)   // EXEC ALGWCLG,PARM.GO='SIZE=220K',REGION=375K
        //ALGOL.SYSIN DD *
  (2)   %ALGOL

          ----- remainder of ALGOL source deck here -----

        /*
  (3)   //LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,
  (3)   //                 DSN=S2600.ALGOLW
  (4)   //            DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,
  (4)   //                 VOL=SER=LINDA
```

```
(5) //             DD DISP=SHR,DSN=SYS1.FORTLIB
    //LINK.SYSPRINT DD DUMMY
(6) //LINK.SYSIN  DD UNIT 2311,VOL=SER=SYS003,DSN=S2600.FOALG3,
(6) //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),
(6) //               DISP=SHR,LABEL=(,,,IN)
    /*
    //GO.FT11F001 DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),
    //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),
    //               LABEL=(,,,IN),DSNAME-S2600.QCARDS
    //GO.FT12F001 DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),
    //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),
    //               LABEL=(,,,IN),DSNAME=S2600.DEL1TPS
    //GO.FT13F001 DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),
    //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),
    //               LABEL=(,,,IN),DSNAME=S2600.MAILER
    //GO.FT14F001 DD UNIT=2321,VOL=SER=CEL003,DISP=(NEW,KEEP),
    //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=2000),
    //               DSNAME=S2600.TPSOUT,SPACE=(CYL,(250,10)),
    //               LABEL=RETPD=30
    //GO.FT15F001 DD UNIT=2311,VOL=SER=SYS003,DISP=(NEW,KEEP),
    //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),
    //               DSNAME=S2600.BIGLBLS,SPACE=(CYL,(5,2)),
    //               LABEL=RETPD=30
    //GO.FT16F001 DD UNIT=2311,VOL=SER=SYS003,DISP=(NEW,KEEP),
    //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),
    //               DSNAME=S2600.LTLLBLS,SPACE=(CYL,(5,2)),
    //               LABEL=RETPD=30
```

```
//GO.FT07F001 DD DUMMY
//GO.SYSIN    DD *
/*
```

Notice that ALGOL was restricted to 220K bytes of core storage, but that the entire "GO" step had 375K, a difference of 155K bytes for the exclusive use of FORTRAN [cf. fields in the execute card highlighted number (1)]. Next, notice that no ALGOL control parameters were included on the "%ALGOL" card because in the compile/load/go version of ALGOLY, there is no communications link between the compile step and the go step. The purpose of the PARM.GO parameter is to supplant that communications link for the ALGOLX monitor communications function. The two cards highlighted number (3) point the OS360 link-editor to the modified ALGOL monitor package which had the execution time control function completely disabled. The two cards following that point the link-editor to ALGOL library which was included in the execution module. Card (5) pointed the link-editor to the FORTRAN library for the FOALG3 subroutine used in the execution phase. The last three cards labelled (6) caused the FOALG3 object deck to be included in the load module also. The remaining definition cards were in the standard JCL format defining the various input and output files.

ANCILLARY DATA BASE FILES

Numerous ancillary files were generated throughout the project either to provide administrative project support or to extend the data actually contained within the data base.

A. TRAINING CARDS [NAMED TCARDS FOR JCL PURPOSES]

The TCARDS file contained the one to five numeric character training utilization codes mentioned applicable to VAR019. A breakdown of the meaning of various codes is provided in Appendix D Table D-7. The format for these cards was the sequence (case) number in card columns 1-3, one blank column, a quote character in column five followed by up to five single digit numeric codes, and then a closing quote character immediately behind the last numeric character to indicate the end of that input string. Only one case number was punched per card and only those cases with training information were included in this file. Three examples of records in this file are:

```
200 "18"
201 "3"
202 "57"
```

This file of training information was preceded by a single card which had the number of training cards included in the TCARDS file punched in card columns 1-3. The TCARDS file was physically sorted in ascending case order prior to having been placed on disk storage.

B. ADDITIONAL OUTPUT CARDS [NAMED ACARDS FOR JCL PURPOSES]

The additional output coded ACARDS file contained the one to three alphabetic character additional output code breakdown [Appendix D Table D-8] applicable to variables VAR062, VAR065, VAR070, VAR073, and VAR078. The format for these cards was sequence (case) number in card columns 1-3, one blank column, a literal 32 character transcription of the respective additional output in word form from variables VAR061, VAR064, VAR069, VAR072, and VAR077 which had been excised earlier by a special card punch program, one blank column, and then up to three single character alphabetic codes representing the coded breakdown from Appendix D Table D-8 beginning in column 38. Up to five different ACARDS could have been produced per case, one to match each possible additional output which may have been added by the respondent. Those cases which had no additional outputs required no ACARDS entry in this file. Four examples of the records on this file are:

```
200 CURRENT INTEL (OPINTEL) PRODUCTN BDI
201 COUNSELING SUBORDINATES          T
201 ESTABLISHING REQUIREMENTS        B
204 PHOTOGRAPHIC SUPPORT             ABF
```

This group of additional output codes was preceded by a single card which had the number of additional output cards included in the ACARDS file punched in card columns 1-3. The ACARDS file was sorted in ascending sequence prior to having been placed on disk storage.

C. MAILING ADDRESS CARDS [NAMED MAILER FOR JCL PURPOSES]

The mailing address MAILER card file contained from one to five cards for each Unit Identification Code (UIC) [VAR004] and provided the mailing address used for that UIC. The format for the cards in this file was the UIC right-justified with leading zeroes in card columns 1-5, a single numeric character in column six referencing the card number within that UIC's address (only one through five were valid entries in that field), and the address line began in column eleven. Columns seven through ten were blank. The maximum allowable line length was 45 alphanumeric characters. Because the address file was used in the same special TPS printing program similar to the respondent's name field, it too was coded with the special control parameters for upper and lower case printing. An example of a record on the MAILER file for UIC 00015 was:

```
000151    /COMMANDER
000152    /NAVAL /INTELLIGENCE /COMMAND
000153    /NAVAL /INTELLIGENCE /COMMAND /HQTRS
000154    2461 /EISENHOWER /AVENUE
000155    /ALEXANDRIA, /VIRGINIA 22331
```

To signal the last record on the MAILER file, a control card was added immediately after the last card of the last address record with the numbers "999999" punched in card columns one through six. This file was sorted in ascending line number order within UIC numbers prior to being placed on disk storage.

D. INTERVIEW DATA CARDS [NAMED ICARDS FOR JCL PURPOSES]

Information coded from the interview data was punched into cards with only one educational area coded per card. The coding form used for the card file is shown in Appendix B Sample D. Because the majority of interview cases resulted in a few and variable number of academic requirements, it was easier for card punching reasons to submit only those fields actually needed or used. A maximum of 46 ICARDS could have been coded for each interview, one corresponding to each academic area. Although the coding scheme appears rather complex, it should be apparent that it was actually very simple. Card columns 1-3 contained the case number, column four indicated the researcher primarily responsible for having coded the interview data, columns 5-7 contained the academic code from Appendix D Table D-10, column eight contained a single numeric digit ("1", "2", "3", or "4" from Appendix D Table D-9) which indicated the educational proficiency level used in the interviewee's billet, and column nine contained a similar digit which indicated the proficiency needed for that billet. Three sample ICARDS records are shown below:

```
200201122
200201313
200202113
```

The last card in the ICARDS file was a dummy end-of-file indicator with "999999999" punched in column 1-9. This file was sorted in ascending order by case number prior to being placed on disk storage.

E. MERGED QUESTIONNAIRE/INTERVIEW FILE [NAMED QICARDS FOR JCL PURPOSES]

The basic questionnaire file, i.e., the seven card data base file already defined as the QCARDS, was merged with transformed ICARDS file data to form the QICARDS file. This file represented the original data collected from the initial 19 August 1974 questionnaire and the interview data collected during the September interviews. The QCARDS were unchanged. The ICARDS were transformed by a matrix manipulation ALGOL source program into two card images; the first card image contained a 46 character string of numbers that represented the educational proficiency used by each interviewee with control information in columns 74-80, the second card image was similar to the first except that it referred to the educational proficiency needed by each interviewee and with a slightly different code in the control block was in the following format: column 74 contained the coder number of the researcher having primary responsibility for the interview data; columns 75-76 contained a sub-card number, "01" for the first card and "02" for the second card; columns 77-79 contained the ubiquitous sequence number; and column 80 contained the card number which was an "8" in all instances. All appendages to the basic data base QCARDS files were numbered as card number eight; the sub-card numbers in columns 75-76 were then utilized to differentiate between all of the appended cards. This sub-card number scheme was used

throughout the remainder of the computerization process. The first four QICARDS appeared thus:

```
                          ...
211113323111122221132334333343333232333311333     2012008
213134444223233332243444444444444443444443344     2012008
                          ...
211113322111111211122323222243213132333321232     2012018
313134433223322311133434333344324243444433443     2022018
                          ...
```

with the intervening seven QCARDS for case number 200 immediately preceding the first group and the seven QCARDS for case number 201 immediately preceding the second group. Coder number two applied in both of these examples. No interview data was specified by a string of 9's in columns 1-46, a nine in column 74, and the remainder of the control block information in the standard format as described above.

Since these two cards became part of the permanent data base file, the individual variables of each card were assigned sequential variable numbers similar to those assigned for the QCARDS file. Valid educational proficiency levels is presented in Appendix D Table D-10. QCARD variables (087 through 186) are listed as declared in Appendix D.

F. THE TEXT PROCESSING SYSTEM (TPS) FORMATTED LETTER FOR THE 6 NOVEMBER 1974 COMPUTER GENERATED DELPHI QUESTIONNAIRE [NAMED DEL1TPS FOR JCL PURPOSES]

The control deck utilized to produce the computerized tailor-made DELPHI Questionnaire dated 6 November 1974 (refer to Appendix B Sample E) was written using normal TPS formatting instructions. A copy of general TPS instructions is included in Appendix F Sample F. The two minor modifications made in this input stream were: (a) the restriction of the formatted statements to card columns 11-80, and (b) the addition of sequenced parameters in columns seven through ten which were used for passing control information between the data base program and the TPS printing input file. During the planning stage, the amount of control space required was unknown, so ten characters were set aside. These were the first ten columns of the card. An asterisk in column ten was the signal to transfer program control to the data base program (written in ALGOL with FORTRAN input/output subroutines), either to insert or to delete information. A three digit number preceding the asterisk was a specified "programmed block number" used to tell the ALGOL source program what functions were to be performed. A listing of the DEL1TPS card file is in Appendix F Sample H.

G. THE 6 NOVEMBER 1974 DELPHI CARDS [NAMED D1CARDS FOR JCL PURPOSES]

The data resulting from the 6 November 1974 DELPHI Questionniare concerning intelligence related outputs was keypunched

directly from the response form provided to the respondent [Appendix B Sample E]. A control block of information similar to that on the QICARDS was added. After having merged the QCARDS and the D1CARDS to produce the QICARDS file, a second merging program was executed to append the D1CARDS, thereby producing the QID1CARD file which was the input file for an SPSS analysis program. The D1CARDS format was 20 three digit fields beginning in card column one, each field corresponding to the revised intelligence related outputs' a flag code in column 72 designated the case as requiring specialized external handling [usually as a result of the respondent having changed billets since the previous questionnaire was received]; the answer to the Defense Intelligence School graduate question in column 73; a code signifying receipt of the DELPHI Questionnaire in column 74; and the sub-block of control information also included. The same list of educational proficiency codes contained in Appendix D Table D-10 applied to these variables as those contained in interview ICARDS file. The D2CARDS were mechanically sorted in ascending order by subcard number within case number prior to having been placed on disk storage. The merged questionnaire QCARDS, interview ICARDS, first DELPHI D1CARDS, and these second DELPHI D2CARDS were called the QID12CDS for JCL purposes.

Again, as an input into the data base file, each variable in this D2CARDS file was numbered in the standard format. These variable declarations are listed in Appendix D (VAR213 through VAR347).

H. THE 17 DECEMBER 1974 DELPHI CARDS [NAMED D2CARDS FOR JCL PURPOSES]

Information returned in the 17 December 1974 DELPHI Questionnaire concerning educational proficiency levels was keypunched directly from the response form supplied to the respondent [Appendix B Sample C]. Two cards per response were generated for data base use. The first card contained educational proficiency information for the three college algebra entries [used, needed, and future educational proficiency codes] through the three entries for naval science collection systems levels. Another special case flag field was also added to this card as well as the block of control information similar to previous cards. The second card in this file contained the three entries for educational proficiency in national security/threat/net assessment through the remainder of the form, i.e., organization of thought, with the card number ("03"), the sequence or case number, and the card number as usual in columns 75-80.

Again, because this information was an input to the data base file, each variable was numbered in the standard format as designated and listed in Appendix D (VAR 187 through VAR 212).

DATA FILE VALIDATION

A. QCARDS VALIDATION

An ALGOL source program was written to make exhaustive reasonability tests on those QCARD variables which could be tested. If minimum or maximum values were exceeded or if values did not correlate with other variables, an error message was produced. The input file was the QCARDS file and the program's output was a sequential listing of error messages. This program, named VALIDATE for JCL purposes, is listed in Appendix F Sample P; a sample output from the VALIDATE program is also given. The following is a list of variables and the reasonability limits used against those variables.

1. VAR004 (Unit Identification Code) had to be one of those specified in Appendix D Table D-1.

2. VAR005 (CONUS/OVERSEAS CODE) had to be one of those lsited in Appendix D Table D-2.

3. VAR006 (State/Country Code) had to be one of those listed in Appendix D Table D-3.

4. VAR007 (Coder Number Code) values were arbitrarily assigned in the manner shown in Appendix D Table D-4. Further, the five researchers were assigned a block of two hundred sequence or case numbers (VAR008, etc.). LCDR Mount was assigned 001 through 199; LT Foster, 200 through 399; LT Bickell, 400 through 599; LT Huber, 600 through 799; and

LT Watson, 800 through 998. VAR007 was then verified by looking at the sequency number assigned to the case as well as being one of those values listed in Appendix D Table D-4. There were some cases which did not follow this coder/case number correlation scheme, but error messages were produced anyway just as a reminder.

5. VAR008/VAR023/VAR059/VAR067/VAR075/VAR081/VAR085 (Sequence or case numbers for each of the seven card images) had to be the same throughout the entire case. This validation test was the first to help in tracing down the situation where either too many or too few cards had been inserted for each case, a very important factor required in all subsequent computer programs.

6. VAR009 (Card One Number) had to be a "1".

7. VAR011 (Respondent's Rank) had to be one of those values listed in Appendix D Table D-5.

8. VAR012 (Respondent's Age) was tested for reasonability, i.e., between 30 and 55 years of age.

9. VAR013 (Respondent's Present Designator)/VAR014 (Respondent's Next Previous Designator)/VAR015 (Respondent's First Designator) variables were checked against the following list: 110x, 111x, 112x, 113x, 131x, 132x, 135x, 161x, 163x, 662x, 663x, 000x, and 999x. Although other designators were not necessarily invalid, it was decided that the majority of all designators would pass the test against the above list. The fourth digit of the designator code was truncated prior to conducting the test.

10. VAR018 (Respondent's Educational Level) was verified to be one of those values listed in Appendix D Table D-6.

11. VAR020 (Respondent's First Intelligence Billet Code) had to be a "0", "1", or "9".

12. VAR021 (Number Years Previous Intelligence Experience) was checked for limits of zero and twenty-five.

13. VAR022 (Number of Months in Present Billet) was checked for limits of zero and 48 months.

14. VAR024 (Card Two Number) had to be a "2".

15. VAR025/VAR027/VAR029/VAR031/VAR033/VAR035/VAR037/VAR039/VAR041/VAR043/VAR045/VAR047/VAR049/VAR051/VAR053/VAR055/VAR057/VAR063/VAR066/VAR071/VAR074/VAR079/VAR080 (each of the various percentages of time spent in each intelligence output) were summed and a warning message issued if that sum were not equal to 100%.

16. VAR026/VAR028/VAR030/VAR032/VAR034/VAR036/VAR038/VAR040/VAR042/VAR044/VAR046/VAR048/VAR050/VAR052/VAR054/VAR056/VAR058 (each of the validity codes associated with the various intelligence output percentages) had to be a "0", "1", or "9". Only one error message was issued regardless of the number of erroneous variables.

17. VAR060 (Card Three Number) had to be a "3".

18. VAR068 (Card Four Number) had to be a "4".

19. VAR076 (Card Five Number) had to be a "5".

20. VAR082 (Card Six Number) had to be a "6".

21. VAR084 (Comments Continuation Code) had to be a "0", "1", or a "2".

22. VAR086 (Card Seven Number) had to be a "7".

Some individual visual checking of variable values was included in this validation process. Corrections were effected by repunching the affected card(s). Upon completion of the validation the file was placed on disk storage.

B. TCARDS VALIDATION

The TCARDS file was listed using autility print program. Validity was visually checked, card-by-card, against the original list from which the card were punched. Corrections were made by repunching the affected card(s). After validation, corrected TCARDS file was placed on disk storage.

C. ACARDS VALIDATION

The ACARDS file was also listed using a utility print program. It was visually checked for validity, card-by-card, against the original list from which the cards were punched. Corrections were made by repunching the affected card(s). The corrected ACARDS file was then placed on disk storage.

D. MAILER VALIDATION

The MAILER file was listed using a utility print program. After a visual card-by-card validity check, corrections were made by repunching the affected card(s). The corrected MAILER file was then placed on disk storage. Additional corrections were made after returns from some of the questionnaires

indicated corrections and/or modifications were necessary. Every change in the MAILER file was followed by another card image to disk storage program.

E. ICARDS VALIDATION

The ICARDS file was listed using a utility print program and was visually checked for validity, card-by-card, against the original list from which the cards were punched. Corrections were made by repunching the affected card(s). After validation, the corrected ICARDS file was placed on disk storage. Additionally, the ALGOL source program which was written to insert the ICARDS file into the data base file performed validity checks against two different fields. First, each of the two single character educational proficiency codes was checked to be sure it was one of those listed in Appendix D Table D-9. Also, the educational area codes were verified to be sure they were among those listed in Appendix D Table D-10. Additional corrections were made by repunching the affected card(s) and re-executing the ICARDS merger program.

F. QCARDS REVALIDATION

Upon completion of all of the above checks and at the time the QCARDS, the ACARDS, and the TCARDS files were merged, an ALGOL source program was executed. It rechecked and internally modified certain data fields. This step resulted in a more uniform data base structure and was necessary because of coder differences in instances where data was either missing or some

other anomalous situation existed. The merged QCARDS/ACARDS/TCARDS file was machine punched into an updated "clean" data base QCARDS file. This new QCARDS file was then used in all subsequent data base programs.

The variables listed below were checked and modified as indicated. A lower case "b" represents an alphabetic blank character.

1. If VAR002 (Billet Sequence Code) was five blank characters, it was changed to "99999".

2. If VAR011 (Respondent's Rank) was a "1" indicating a civilian, VAR013/VAR014/VAR015 (Designator Variables) were changed to "9999".

3. If VAR014 (Respondent's Previous Designator) was all blank characters, then it was replaced with "9999".

4. If VAR015 (Respondent's First Designator) was all blank characters, then it was replaced with "9999".

5. If VAR016 (Billet Subspecialty Code) was "NONEb", then it was changed to "00000"; if VAR016 was "bbbbb" or NAbbb" then it was changed to "99999".

6. If VAR017 (Respondent's Subspecialty Code) was "NONEb" then it was changed to "00000"; if VAR017 was "bbbbb" or "NAbbb" then it was changed to "99999".

7. VAR018 (Educational Level) was changed from a blank to "9" if necessary.

8. VAR021 (Number Years Previous Intelligence Experience) was changed to "99" if the field was blank.

9. VAR022 (Number of Months in Present Billet) was changed to "99" if the field was blank.

10. VAR025/VAR027/VAR029/VAR031/VAR033/VAR035/VAR037/VAR/039/VAR041/VAR043/VAR045/VAR047/VAR049/VAR051/VAR053/VAR055/VAR057 (Percentages of time spent on various intelligence related outputs) each were changed to "999" if the field was all blank.

11. VAR026/VAR028/VAR030/VAR032/VAR034/VAR036/VAR038/VAR040/VAR042/VAR044/VAR046/VAR048/VAR050/VAR052/VAR054/VAR056/VAR058 (Validity of intelligence output codes) each were changed to "9" if the field were blank.

12. If VAR063 (Percentage time devoted to first additional output) was blank, then it was changed according to the following test: if VAR061 (First Additional Output Wording) was blank, then VAR063 was made "000", otherwise it was changed to "999".

13. If VAR066 (Percentage time devoted to second additional output) was blank, then it was changed according to the following test: if VAR064 (Second Additional Output Wording) was blank, then VAR066 was made "000", otherwise it was changed to "999".

14. If VAR071 (Percentage time devoted to third additional output) was blank, then it was changed according to the following test: if VAR069 (Third Additional Output Wording) was blank, then VAR071 was made "000", otherwise it was changed to "999".

15. If VAR074 (Percentage time devoted to fourth additional output) was blank, then it was changed according to the following test: if VAR072 (Fourth Additional Output Wording) was blank, then VAR074 was made "000", otherwise it was changed to "999".

16. If VAR079 (Percentage time devoted to fifth additional output) was blank, then it was changed according to the following test: if VAR077 (Fifth Additional Output Wording) was blank, then VAR079 was made "000", otherwise it was changed to "999".

17. If VAR080 (Percentage time devoted to non-intelligence outputs) was blank, then it was changed to "000".

18. If VAR084 (Comments Continuation Code) was blank, then it was changed to "0" if VAR083 (Comments) was blank or changed to "1" if VAR083 was not blank.

G. QICARDS VALIDATION

Validation of the QICARDS file was not necessary because it resulted from a programmed merger of two files that had already been validated. QICARDS was a composite of the QCARDS and the ICARDS files.

H. D1CARDS VALIDATION

The D1CARDS file was listed using an ALGOL source program written for that purpose. That program is shown in Appendix F Sample A with a sample printed output. The control block information was printed in a readable format along with each

of the twenty output percentages on a separate line. This program also checked to insure all twenty output percentages totalled 100%, as well as the following checks:

1. VAR207 (Special Case Flag), cc 72, had to be a "0" or "1".

2. VAR208 (Defense Intelligence School Graduate Status), cc 73, had to be a "0", "1", or "2".

3. VAR209 (DELPHI Response Validity Code), cc 74, had to be a "1".

4. VAR210 (Card Eight, Sub-card 03 Number), cc 75-76, had to be "03".

5. VAR212 (Card 8-03 Number), cc 80, had to be "8".

This printout was then visually checked page-by-page against the original DELPHI Questionnaire from which the D1CARDS were punched. Corrections were made by repunching the affected card(s). The corrected D1CARDS file was then placed on disk storage.

I. D2CARDS VALIDATION

The D2CARDS file was listed using an ALGOL source program written for that purpose. That program is shown in Appendix F Sample Q with a sample printed output. The control block information was printed in a readable format with each of the 42 groups of three educational proficiency level codes on a separate line. This program also checked to insure each educational proficiency code was one of those listed in Appendix D Table D-9 as well as the following checks:

1. There had to be exactly two cards for each sequence or case number contained in the file and those two cards had to be in the proper order.

2. VAR273 (Special Case Flag), card 04 cc 61, had to be a "0" or "1".

3. VAR274 (DELPHI Response Validity Code), card 04 cc 74, had to be a "1".

4. VAR275 (Card Eight, Sub-card 04, Number), card 04 cc 75-76, had to be a "04".

5. VAR277 (Card 8-04 Number), card 04 cc 80, had to be an "8".

6. VAR344 (DELPHI Response Validity Code), card 05 cc 74, had to be a "1".

7. VAR345 (Card Eight, Sub-card 05, Number), card 05 cc 75-76, had to be a "05".

8. VAR347 (Card 8-05 Number), card 05 cc 80, had to be an "8".

This printout was then visually checked page-by-page against the original DELPHI Questionnaire from which the D2CARDS were punched. Corrections were made by repunching the affected card(s). The corrected D2CARDS file was then placed on disk storage.

J. DEL1TPS VALIDATION

Validation was not applicable to the formatted letter cards which were used as the input file for the computer generated DELPHI Questionnaire.

PRINTING OF DATA FILES

An ALGOL source program was written to print, in a readable format, each variable of the basic data base QCARDS file. This program, listed in Appendix F Sample B was named DISPLAY for JCL purposes and was stored on the data disk because of its frequent use. The input file for the DISPLAY program was the QCARDS file and the program's output is exhibited in Appendix F Sample C. All information contained in the QCARDS file was displayed.

Other than the utility and special ALGOL programs used in data file validation and the DISPLAY program mentioned above, no other printing of the data base was accomplished by other than standardized utility and packaged programs. It should be noted that SPSS programs had the facility for printing variables from within the data base. This feature was used to the maximum extent possible.

DATA FILE GENERATION CHRONOLOGY

A. BACKGROUND

The following explanation traces, step-by-step, the file generation procedures. Each step utilizes the data declarations already presented and gradually builds toward a chronological construction/utilization analysis. Each step builds sequentially from the previous steps. The starting point is the basic data base module, i.e., the QCARDS file.

B. ADDITION OF TRAINING AND ADDITIONAL OUTPUT DATA

1. Discussion

The respondents' training information [VAR019], and the five additional output code variables [VAR062, VAR065, VAR070, VAR073, and VAR078] could not be coded at the time of the initial questionnaire coding. This was due to the fact that no general classifications were possible without having first considered all of the different types of code values needed. Delayed inputting of these variables resulted in a more precise evaluation of the specific requirements of those six variables.

2. Execution

An ALGOL source program was written which merged the three card image disk files QCARDS, ACARDS, and TCARDS. Only one output file was generated by this program. That output was an updated version of the QCARDS data file in the form of a newly punched card deck. The training information from the

TCARDS file and the additional output codes from the ACARDS file were inserted for each case prior to generating the new card deck. This program was also used for the revalidation process of the QCARDS file, a procedure already discussed. The TCARDS and the ACARDS files were unchanged by this program. The updated QCARDS punch deck was then placed on disk storage thereby overlaying the original QCARDS file. It was this new QCARDS file that was the input file for subsequent data base programs. The program used for this revalidation and merger was written in ALGOL and used FORTRAN input/output subroutines described in the discussion of "FOALG3". Appendix E Figure E-2 and Appendix F Sample D apply to these two programs.

C. CREATION OF THE FIRST STATISTICAL PACKAGE

After the updated QCARDS punched during the revalidation and merger program were placed on disk, the first SPSS statistical file creation program was executed. Using the "SAVE FILE" feature of SPSS, all 86 variables associated with the QCARDS file were retained on disk storage for subsequent analysis. This SPSS file was named the INTELLA file for JCL and SPSS purposes and is listed in Appendix F Sample E.

D. COMPUTER PRINTED DELPHI QUESTIONNAIRE

1. Discussion

The 6 November 1974 DELPHI "A2" was concerned with further defining that amount of time which was spent on each of the intelligence related outputs. The iterative DELPHI technique required a controlled feedback. In order to

provide each respondent with information concerning his previous response, this data could have been extracted manually from the coding forms or electronically from the QCARDS file through the use of the computer. Further, a method was required to verify the biographical information which had been coded in the basic data base file. As should now be obvious, each DELPHI Questionnaire was a unique entity. This uniqueness precluded the use of normal printing services and necessitated computer printing. The sample population was entirely too large to consider manual preparation. Although it may be argued, and with some justification, that excess complexity in this hardcopy preparation cycle overrode any accrued advantages in the DELPHI technique, two facts must be remembered: (a) the burden was to be placed on the computer, and (b) it was believed that high response ratios could only be achieved by communicating on a personal level with the sample population. Once the use of this DELPHI technique with such a large sample population was proven feasible, was debugged, and was made operational, a new and more effective method would be available to others attempting similar projects.

2. Assemblying the DELPHI Questionnaire

After the DELPHI "A2" format was established, the basic letter was transposed into punched cards using the TPS coding scheme described in Appendix F Sample F. Only columns 11-80 were used for this textual material. For each place in the formatted letter which required information from or deletion

of certain textual material based on the data base variables, there was a card coded with a sequentially numbered program entry block. This program entry block number was the three digit number in card columns seven through nine, coupled with the program control signal, an asterisk, punched in column ten. An ALGOL program, listed in Appendix F Sample G, then accomplished a specific transformation based on Boolean decisions from data base information. Each QCARDS case was read in an ALGOL control, and then the ALGOL program reconciled the formatted letter against each case. The final TPS formatted letter card file used for this program was labelled DEL1TPS for JCL purposes and is listed in Appendix F Sample H. The additional support files utilized in the ALGOL program were the MAILER file for addressing information, and the QCARDS file.

3. Printing the DELPHI Output

The primary output from this ALGOL/FORTRAN/TPS combination was a file of over 100,000 card images which was used in a normal TPS printing program on unruled bond paper. Approximately 1400 pages of upper and lower case DELPHI Questionnaires were printed. Example DELPHI Questionnaires are shown in Appendix B Sample E. It is interesting to note that this printer file was the only one which was not contained on the SYS003 disk file. It was too large to fit on the 200 cylinders of a Model 2311 disk unit, even with the maximum blocking factor available. The Model 2321 Data Cell storage equipment was used for this file.

Two secondary files were also generated during the preparation of the DELPHI Questionnaire. These were for the two address labels used on the mailing and return envelopes. Four labels were produced per DELPHI Questionnaire: one large and one small label each with the respondent's command name and mailing address and with the respondent's name included on the larger of the two; and one large and one small address label each with the Naval Postgraduate School's address. The three digit sequence number was included on each address label as an extra precaution for questionnaire identification should the respondent's name accidentally be removed from the body of the questionnaire. The resulting questionnaire was the ultimate in simplicity since each respondent was only required to fill in the information specifically requested. He then returned the DELPHI in the self-addressed envelope provided. The labels produced were of the machine printed adhesive, press-to-apply variety. The large labels were Federal Stock Number [FSN] 7530-082-2662; the smaller labels were FSN 7530-082-2661. The FORTRAN program used for printing the labels and sample labels are shown in Appendix F Sample I.

E. INTERVIEW DATA INSERTION

1. Discussion

The QCARDS file with seven card images per case was merged with the variable length ICARDS file to produce the

QICARDS file. This new file contained exactly nine cards per case: the basic seven card base with two formatted interview data cards for each case appended.

2. Execution

An ALGOL source program, Appendix F Sample J, was written to read each QCARDS case and duplicate that seven card image block identically on an output file using the FOALG3 input/output FORTRAN subroutines (Figure E-2). The ICARDS file was then rewound and searched card-by-card for any and all records which had the same sequence or case number. If no ICARDS image was found, a dummy 46x2 education matrix was generated with control block information added for continuity. Two dummy educational proficiency level card images were then appended to the output file. This dummy matrix was essentially filled with "9's". If at least one ICARDS entry was found for the case being processed, this same 46x2 educational proficiency level matrix was constructed using all applicable ICARDS images. Any unused educational codes were forced to a "1" code indicating an unused or unneeded level. Two valid card images were then appended to the output file. A single ICARDS for the case being processed was sufficient to indicate that an interview had taken place. A dummy education matrix was signified by a "9" value for VAR133 and VAR183 [Interview Coder Number variables], whereas a valid education matrix resulted in those two variables containing a valid researcher code number from Appendix D Table D-4.

F. CREATION OF THE SECOND STATISTICAL PACKAGE

After the merged QCARDS/ICARDS file was available on the data disk, the second SPSS statistical file creation program was executed. Using the "SAVE FILE" feature of SPSS, all 186 variables associated the QICARDS file were retained on disk storage for subsequent analysis. This SPSS file was named the INTELLB file for JCL and SPSS purposes and is listed in Appendix F Sample K.

G. SECOND DELPHI QUESTIONNAIRE MAILING LABEL PREPARATION

1. Discussion

The 17 December 1974 DELPHI "B" concerned the current and changing educational requirements of naval intelligence. This DELPHI Questionnaire was produced using regular printing services of the Educational Media Department at the Naval Postgraduate School. A copy of this questionnaire is shown in Appendix B Sample C. The large space between the date and the first paragraph was used for large address labels which had the command name and mailing address printed on the upper lines, and the persons' name in a "Greeting Format" on the bottom line.

2. Execution

The ALGOL program logic used to print the computerized DELPHI Questionnaire was extracted and slightly modified for the preparation of these lables. Again, two different size labels were produced. As each QCARDS case was read, three large labels and two small labels were produced. The first

four labels were similar to those produced in previous programs. The additional fifth label was the "Greeting Format"; e.g., the last line read "DEAR LCDR JONES:".

The only two input files needed for this ALGOL program were the QCARDS and the MAILER files. Printing was accomplished by the same simple FORTRAN program used in earlier programs and is shown in Appendix F Sample I.

H. 6 NOVEMBER 1974 DELPHI DATA INSERTION

1. Discussion

The QICARDS file with nine card images per case was merged with the D1CARDS which resulted from the 6 November 1974 intelligence outputs DELPHI Questionnaire. This new file, named the QID1CDS file, contained ten card images per case.

2. Execution

An ALGOL source program, Appendix F Sample L was written to read each QICARDS case and duplicate that nine card image block identically on an output file using the FOALG3 input/output FORTRAN subroutines (Figure E-2). When necessary, the D1CARDS file was rewound, and then that file was searched card-by-card for a card image with the same sequence number. If no D1CARDS image was found, a dummy record was generated internally with control block information added for continuity and then this dummy record was placed on the output file. A dummy record was essentially all "9's" with

VAR209 becoming a "0" value to indicate a dummy record. If a D1CARDS image was found for the sequence number being processed, that record was placed on the output file without being altered. VAR209 was a "1" in those instances.

I. CREATION OF THE THIRD STATISTICAL PACKAGE

After the merged QICARDS/D1CARDS file was available on the data disk, the third SPSS statistical file creation program was executed. Using the "SAVE FILE" feature of SPSS, all 212 variables associated with the QID1CDS file were retained on disk storage for subsequent analysis. This SPSS file was named the INTELLC file for JCL and SPSS purposes and is listed in Appendix F Sample M.

J. 17 DECEMBER 1974 DELPHI DATA INSERTION

1. Discussion

The QID1CDS file with ten card images per case was merged with the D2CARDS which resulted from the 17 December 1974 educational proficiency level DELPHI "B". This new file, named the QID12CDS file, contained twelve card images per case.

2. Execution

An ALGOL source program, Appendix F Sample N was written to read each QID1CDS case and duplicate that ten card image block identically on an output file using the FOALG3 input/output FORTRAN subroutines (Figure E-2). When necessary, the D2CARDS file was rewound, and then that file

was searched two cards at a time for a match with the same sequence number that was being processed. If no D2CARDS images were found, two dummy records were generated internally with control block information added for continuity. These two dummy records were then placed on the output file. The dummy records were essentially all "9's" with VAR274 and VAR344 becoming a "0" to indicate a set of dummy records were entered in the file for that case. If the D2CARDS file contained a match for the case, those two records were placed on the output file without being altered. VAR274 and VAR344 were a "1" in those instances.

K. CREATION OF THE FOURTH STATISTICAL PACKAGE

After the merged QID1CDS/D2CARDS file was available on the data disk, the fourth SPSS statistical file creation program was executed. Using the "SAVE FILE" feature of SPSS, all 347 variables associated with the QID12CDS file were retained on disk storage for subsequent analysis. This SPSS file was named the INTELLD file for JCL and SPSS purposes and is listed in Appendix F Sample O.

L. CLOSURE OF THE DATA FILES

Upon completion of the initial analysis of the data and return of the data disk to the computer center for other users, all files of historical interest were punched onto cards. The punched cards were transferred to the custody of the Naval Intelligence Curriculum Officer (Code 382) at the

Naval Postgraduate School. Additionally, the INTELLD file was cosmetically cleaned-up, renamed the INTELL file, and then transferred to tape for storage. All information received from the respondents through 28 February 1975 was placed in the final INTELL statistical package. The program and file listings required to reconstruct the entire data base are contained within the appendices of this thesis. An 80 column listing of the last working file, the QID12CDS file, is contained in Appendix F Sample P with only the researchers' comments [VAR083, card number seven, card columns 1-75] deleted.

APPENDIX F

SAMPLE A

ALGOL SOURCE PROGRAM TO PRINT AND VERIFY D1CARDS, WITH SAMPLE OUTPUT

```
//HUBER JOB (2600,0578,YS42),'HUBER,E.W.'
// EXEC ALGOLW
//SYSPRINT DD SYSOUT=D,SPACE=(CYL,(4,1))
//SYSIN DD *
%ALGOL TIME=20,PAGES=300
BEGIN
STRING (80) BUFFER;
INTEGER CTR;

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

PROCEDURE BLANKLINES; FOR X := 1, 2 DO WRITE (" ");

READCARD (BUFFER);
WHILE BUFFER(71|9) ¬= "999999999" DO
   BEGIN
   IOCONTROL (3);
   WRITE ("CASE NUMBER ", BUFFER(76|3));
   IF BUFFER(71|1) = "1" THEN WRITEON (" FLAGGED SPECIAL CASE");
   BLANKLINES;
   WRITE (IF BUFFER(72|1) = "0" THEN "DIS QUESTION NOT ASKED" ELSE
      IF BUFFER(72|1) = "1" THEN "NEGATIVE RESPONSE TO DIS QUESTION"
      ELSE IF BUFFER(72|1) = "2" THEN "AFFIRM RESPONSE TO DIS QUESTION"
      ELSE "INVALID DIS STATUS CODE");
   BLANKLINES;
   CTR := 0;
   FOR X := 0 STEP 3 UNTIL 57 DO
      BEGIN
      WRITE (BUFFER(X|3));
      WRITE (" ");
      CTR := CTR + CONVERT(BUFFER(X|3));
      END;
   BLANKLINES;
   IF CTR ¬= 100 THEN WRITE ("OUTPUTS DON'T EQUAL 100%");
   IF (BUFFER(73|3) ¬= "103") OR (BUFFER(79|1) ¬= "8") THEN
      WRITE ("INVALID CONTROL BLOCK INFORMATION");
   READCARD (BUFFER);
   END;
END.
%EOF
```

CASE NUMBER 203

DIS QUESTION NOT ASKED

013
012
000
005
008
007
002
000
025
005
000
000
000
000
010
003
002
005
000
003

CASE NUMBER 205

AFFIRM RESPONSE TO DIS QUESTION

010
015
005
015
005
015
000
000
000
035
000
000
000
000
000
000
000
000
000
000

CASE NUMBER 215

NEGATIVE RESPONSE TO DIS QUESTION

015
015
002
015
002
005
005
000
003
003
000
001
002
002
002
000
005
000
020
005

OUTPUTS DON'T EQUAL 100%

CASE NUMBER 223 FLAGGED SPECIAL CASE

DIS QUESTION NOT ASKED

000
040
015
020
010
000
000
000
000
000
000
000
000
000
015
000
000
000
000
000

```
CASE NUMBER 510 FLAGGED SPECIAL CASE

INVALID DIS STATUS CODE

999
999
999
999
999
999
999
999
999
999
999
999
999
999
999
999
999
999
999
999

OUTPUTS DON'T EQUAL 100%
```

APPENDIX F

SAMPLE B

ALGOL SOURCE PROGRAM TO DISPLAY BASIC DATA BASE CARDS

```
//HUBER001 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=1
// EXEC ALGWCLG,REGION=150K,PARM.GO='P=500'
//ALGOL.SYSIN DD *
%ALGOL TIME=60,PAGES=500,SIZE=150K
BEGIN
STRING (25) VAR001;
STRING (37) VAR003;
STRING (40) VAR010;
STRING (32) VAR061, VAR064, VAR069, VAR072, VAR077;
STRING (75) VAR083;
STRING (1) VAR005A, VAR007A, VAR009A, VAR011A, VAR018A, VAR020A,
   VAR024A, VAR026A, VAR028A, VAR030A, VAR032A, VAR034A, VAR036A,
   VAR038A, VAR040A, VAR042A, VAR044A, VAR046A, VAR048A, VAR050A,
   VAR052A, VAR054A, VAR056A, VAR058A, VAR060A, VAR068A, VAR076A,
   VAR082A, VAR084A, VAR086A;
STRING (2) VAR006, VAR012A, VAR021A, VAR022A;
STRING (3) VAR008A, VAR023A, VAR025A, VAR027A, VAR029A, VAR031A,
   VAR033A, VAR035A, VAR037A, VAR039A, VAR041A, VAR043A, VAR045A,
   VAR047A, VAR049A, VAR051A, VAR053A, VAR055A, VAR057A, VAR059A,
   VAR062A, VAR063A, VAR065A, VAR066A, VAR067A, VAR070A, VAR071A,
   VAR073A, VAR074A, VAR075A, VAR078A, VAR079A, VAR080A, VAR081A,
   VAR085A;
STRING (4) VAR013A, VAR014A, VAR015A;
STRING (5) VAR002A, VAR004A, VAR016, VAR017, VAR019;
INTEGER VAR002, VAR004, VAR005, VAR007, VAR008, VAR009,
   VAR011, VAR012, VAR013, VAR014, VAR015, VAR018, VAR020, VAR021,
   VAR022, VAR023, VAR024, VAR025, VAR026, VAR027, VAR028, VAR029,
   VAR030, VAR031, VAR032, VAR033, VAR034, VAR035, VAR036, VAR037,
   VAR038, VAR039, VAR040, VAR041, VAR042, VAR043, VAR044, VAR045,
   VAR046, VAR047, VAR048, VAR049, VAR050, VAR051, VAR052, VAR053,
   VAR054, VAR055, VAR056, VAR057, VAR058, VAR059, VAR060, VAR062,
   VAR063, VAR065, VAR066, VAR067, VAR068, VAR070, VAR071, VAR073,
   VAR074, VAR075, VAR076, VAR078, VAR079, VAR080, VAR081, VAR082,
   VAR084, VAR085, VAR086, QCASES;

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

PROCEDURE GETCASE;
   BEGIN IMAGE1;
   IMAGE2;
```

```
    IMAGE3;
    IMAGE4;
    IMAGE5;
    IMAGE6;
    IMAGE7;
    END;

PROCEDURE IMAGE1;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR001 := BUFFER(0|25);
    VAR002 := CONVERT (BUFFER(25|5));
    VAR002A := BUFFER(25|5);
    VAR003 := BUFFER(30|37);
    VAR004 := CONVERT (BUFFER(67|5));
    VAR004A := BUFFER(67|5);
    VAR005 := CONVERT (BUFFER(72|1));
    VAR005A := BUFFER(72|1);
    VAR006 := BUFFER (73|2);
    VAR007 := CONVERT (BUFFER(75|1));
    VAR007A := BUFFER(75|1);
    VAR008 := CONVERT (BUFFER(76|3));
    VAR008A := BUFFER(76|3);
    VAR009 := CONVERT (BUFFER(79|1));
    VAR009A := BUFFER(79|1);
    END;

PROCEDURE IMAGE2;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR010 := BUFFER(0|40);
    VAR011 := CONVERT (BUFFER(40|1));
    VAR011A := BUFFER(40|1);
    VAR012 := CONVERT (BUFFER(41|2));
    VAR012A := BUFFER(41|2);
    VAR013 := CONVERT (BUFFER(43|4));
    VAR013A := BUFFER(43|4);
    VAR014 := CONVERT (BUFFER(47|4));
    VAR014A := BUFFER(47|4);
    VAR015 := CONVERT (BUFFER(51|4));
    VAR015A := BUFFER(51|4);
    VAR016 := BUFFER(55|5);
    VAR017 := BUFFER(60|5);
    VAR018 := CONVERT (BUFFER(65|1));
    VAR018A := BUFFER(65|1);
    VAR019 := BUFFER(66|5);
    VAR020 := CONVERT (BUFFER(71|1));
    VAR020A := BUFFER(71|1);
```

```
    VAR021 := CONVERT (BUFFER(72|2));
    VAR021A := BUFFER(72|2);
    VAR022 := CONVERT (BUFFER(74|2));
    VAR022A := BUFFER(74|2);
    VAR023 := CONVERT (BUFFER(76|3));
    VAR023A := BUFFER(76|3);
    VAR024 := CONVERT (BUFFER(79|1));
    VAR024A := BUFFER(79|1);
    END;

PROCEDURE IMAGE3;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR025 := CONVERT (BUFFER(0|3));
    VAR025A := BUFFER(0|3);
    VAR026 := CONVERT (BUFFER(3|1));
    VAR026A := BUFFER(3|1);
    VAR027 := CONVERT (BUFFER(4|3));
    VAR027A := BUFFER(4|3);
    VAR028 := CONVERT (BUFFER(7|1));
    VAR028A := BUFFER(7|1);
    VAR029 := CONVERT (BUFFER(8|3));
    VAR029A := BUFFER(8|3);
    VAR030 := CONVERT (BUFFER(11|1));
    VAR030A := BUFFER(11|1);
    VAR031 := CONVERT (BUFFER(12|3));
    VAR031A := BUFFER(12|3);
    VAR032 := CONVERT (BUFFER(15|1));
    VAR032A := BUFFER(15|1);
    VAR033 := CONVERT (BUFFER(16|3));
    VAR033A := BUFFER(16|3);
    VAR034 := CONVERT (BUFFER(19|1));
    VAR034A := BUFFER(19|1);
    VAR035 := CONVERT (BUFFER(20|3));
    VAR035A := BUFFER(20|3);
    VAR036 := CONVERT (BUFFER(23|1));
    VAR036A := BUFFER(23|1);
    VAR037 := CONVERT (BUFFER(24|3));
    VAR037A := BUFFER(24|3);
    VAR038 := CONVERT (BUFFER(27|1));
    VAR038A := BUFFER(27|1);
    VAR039 := CONVERT (BUFFER(28|3));
    VAR039A := BUFFER(28|3);
    VAR040 := CONVERT (BUFFER(31|1));
    VAR040A := BUFFER(31|1);
    VAR041 := CONVERT (BUFFER(32|3));
    VAR041A := BUFFER(32|3);
    VAR042 := CONVERT (BUFFER(35|1));
```

```
   VAR042A := BUFFER(35|1);
   VAR043 := CONVERT (BUFFER(36|3));
   VAR043A := BUFFER(36|3);
   VAR044 := CONVERT (BUFFER(39|1));
   VAR044A := BUFFER(39|1);
   VAR045 := CONVERT (BUFFER(40|3));
   VAR045A := BUFFER(40|3);
   VAR046 := CONVERT (BUFFER(43|1));
   VAR046A := BUFFER(43|1);
   VAR047 := CONVERT (BUFFER(44|3));
   VAR047A := BUFFER(44|3);
   VAR048 := CONVERT (BUFFER(47|1));
   VAR048A := BUFFER(47|1);
   VAR049 := CONVERT (BUFFER(48|3));
   VAR049A := BUFFER(48|3);
   VAR050 := CONVERT (BUFFER(51|1));
   VAR050A := BUFFER(51|1);
   VAR051 := CONVERT (BUFFER(52|3));
   VAR051A := BUFFER(52|3);
   VAR052 := CONVERT (BUFFER(55|1));
   VAR052A := BUFFER(55|1);
   VAR053 := CONVERT (BUFFER(56|3));
   VAR053A := BUFFER(56|3);
   VAR054 := CONVERT (BUFFER(59|1));
   VAR054A := BUFFER(59|1);
   VAR055 := CONVERT (BUFFER(60|3));
   VAR055A := BUFFER(60|3);
   VAR056 := CONVERT (BUFFER(63|1));
   VAR056A := BUFFER(63|1);
   VAR057 := CONVERT (BUFFER(64|3));
   VAR057A := BUFFER(64|3);
   VAR058 := CONVERT (BUFFER(67|1));
   VAR058A := BUFFER(67|1);
   VAR059 := CONVERT (BUFFER(76|3));
   VAR059A := BUFFER(76|3);
   VAR060 := CONVERT (BUFFER(79|1));
   VAR060A := BUFFER(79|1);
   END;

PROCEDURE IMAGE4;
   BEGIN STRING (80) BUFFER;
   READCARD (BUFFER);
   VAR061 := BUFFER(0|32);
   VAR062 := CONVERT (BUFFER(32|3));
   VAR062A := BUFFER(32|3);
   VAR063 := CONVERT (BUFFER(35|3));
   VAR063A := BUFFER(35|3);
   VAR064 := BUFFER(38|32);
```

```
    VAR065 := CONVERT (BUFFER(70|3));
    VAR065A := BUFFER(70|3);
    VAR066 := CONVERT (BUFFER(73|3));
    VAR066A := BUFFER(73|3);
    VAR067 := CONVERT (BUFFER(76|3));
    VAR067A := BUFFER(76|3);
    VAR068 := CONVERT (BUFFER(79|1));
    VAR068A := BUFFER(79|1);
    END;

PROCEDURE IMAGE5;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR069 := BUFFER(0|32);
    VAR070 := CONVERT (BUFFER(32|3));
    VAR070A := BUFFER(32|3);
    VAR071 := CONVERT (BUFFER(35|3));
    VAR071A := BUFFER(35|3);
    VAR072 := BUFFER(38|32);
    VAR073 := CONVERT (BUFFER(70|3));
    VAR073A := BUFFER(70|3);
    VAR074 := CONVERT (BUFFER(73|3));
    VAR074A := BUFFER(73|3);
    VAR075 := CONVERT (BUFFER(76|3));
    VAR075A := BUFFER(76|3);
    VAR076 := CONVERT (BUFFER(79|1));
    VAR076A := BUFFER(79|1);
    END;

PROCEDURE IMAGE6;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR077 := BUFFER(0|32);
    VAR078 := CONVERT (BUFFER(32|3));
    VAR078A := BUFFER(32|3);
    VAR079 := CONVERT (BUFFER(35|3));
    VAR079A := BUFFER(35|3);
    VAR080 := CONVERT (BUFFER(38|3));
    VAR080A := BUFFER(38|3);
    VAR081 := CONVERT (BUFFER(76|3));
    VAR081A := BUFFER(76|3);
    VAR082 := CONVERT (BUFFER(79|1));
    VAR082A := BUFFER(79|1);
    END;

PROCEDURE IMAGE7;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
```

```
    VAR083 := BUFFER(0|75);
    VAR084 := CONVERT (BUFFER(75|1));
    VAR084A := BUFFER(75|1);
    VAR085 := CONVERT (BUFFER(76|3));
    VAR085A := BUFFER(76|3);
    VAR086 := CONVERT (BUFFER(79|1));
    VAR086A := BUFFER(79|1);
    END;

PROCEDURE DISPLAYCASE;
    BEGIN IOCONTROL (3);
    IOCONTROL (4);
    WRITE ("COMMAND NAME: ", VAR001);
    WRITE ("BILLET SEQUENCE CODE: ", IF (VAR002 = 0) OR (VAR002 = 99999)
       THEN "NONE LISTED" ELSE VAR002A);
    WRITE ("BILLET TITLE: ", VAR003);
    WRITE ("UNIT IDENTIFICATION CODE: ", VAR004A);
    WRITE ("CONUS-OVERSEAS CODE: ", VAR005A, " = ", IF VAR005 = 0
       THEN "CONUS" ELSE IF VAR005 = 1 THEN "EUROPE" ELSE IF VAR005 = 2
       THEN "PACIFIC" ELSE IF VAR005 = 3 THEN "ATLANTIC/MED AFLOAT"
       ELSE IF VAR005 = 4 THEN "PACIFIC AFLOAT" ELSE "INVALID CODE");
    WRITE ("COUNTRY-STATE CODE: ", VAR006);
    WRITE ("CODER CODE: ", VAR007A, " = ", IF VAR007 = 1 THEN
       "LCDR MOUNT" ELSE IF VAR007 = 2 THEN "LT FOSTER" ELSE IF
       VAR007 = 3 THEN "LT BICKELL" ELSE IF VAR007 = 4 THEN "LT HUBER"
       ELSE IF VAR007 = 5 THEN "LT WATSON" ELSE "INVALID CODE");
    WRITE (" ");
    WRITE ("RESPONDENT'S NAME: ", VAR010);
    WRITE ("RESPONDENT'S RANK: ", IF VAR011 = 1 THEN "CIVILIAN" ELSE
       IF VAR011 = 3 THEN "LIEUTENANT" ELSE IF VAR011 = 4 THEN "LCDR"
       ELSE IF VAR011 = 5 THEN "CDR" ELSE IF VAR011 = 6 THEN "CAPT"
       ELSE "INVALID CODE");
    WRITE ("RESPONDENT'S AGE: ", IF VAR012 = 99 THEN "NOT LISTED"
       ELSE VAR012A);
    WRITE ("RESPONDENT'S DESIGNATOR HISTORY: ", VAR013A);
    IF ¬((VAR014 = 0000) OR (VAR014 = 9999)) THEN
       WRITEON (", ", VAR014A);
    IF ¬((VAR015 = 0000) OR (VAR015 = 9999)) THEN
       WRITEON (", ", VAR015A);
    WRITE ("BILLET SUBSPECIALTY CODE: ", IF VAR016 = "99999" THEN
       "NONE LISTED" ELSE VAR016);
    WRITE ("RESPONDENT'S SUBSPECIALTY CODE: ", IF VAR017 = "99999"
       THEN "NONE LISTED" ELSE VAR017);
    WRITE ("EDUCATIONAL LEVEL: ", IF VAR018 = 0 THEN
       "LESS THAN BACHELORS DEGREE" ELSE IF VAR018 = 1 THEN
       "BACHELORS LEVEL" ELSE IF VAR018 = 2 THEN "POSTGRAD STUDIES"
       ELSE IF VAR018 = 4 THEN "MASTERS LEVEL" ELSE IF VAR018 = 5 THEN
       "DOCTORAL LEVEL" ELSE "INVALID CODE");
```

```
WRITE ("TRAINING USED IN THIS BILLET: ", IF VAR019 = "      "
   THEN "NONE LISTED" ELSE VAR019);
WRITE ("FIRST INTELL BILLET?: ", IF VAR020 = 0 THEN "NO" ELSE
   "YES");
WRITE ("YEARS PREVIOUS INTELLIGENCE EXPERIENCE: ", IF VAR021 = 99
   THEN "NOT LISTED" ELSE VAR021A);
WRITE ("MONTHS IN THIS BILLET: ", IF VAR022 = 99 THEN "NOT LISTED"
   ELSE VAR022A);
WRITE (" ");
WRITE ("INTELL OFFICE ADMINISTRATION:  ",VAR025A, "%", IF VAR026 = 0
   THEN "  NOT VALID" ELSE IF VAR026 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("BRIEFS AND DEBRIEFS:           ",VAR027A, "%", IF VAR028 = 0
   THEN "  NOT VALID" ELSE IF VAR028 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("BUDGETS AND BUDGETING:         ",VAR029A, "%", IF VAR030 = 0
   THEN "  NOT VALID" ELSE IF VAR030 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("CHARTS AND AUDIO-VISUAL AIDS:  ",VAR031A, "%", IF VAR032 = 0
   THEN "  NOT VALID" ELSE IF VAR032 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("COUNTERINTELLIGENCE STUDIES:   ",VAR033A, "%", IF VAR034 = 0
   THEN "  NOT VALID" ELSE IF VAR034 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("DATA ANALYSIS:                 ",VAR035A, "%", IF VAR036 = 0
   THEN "  NOT VALID" ELSE IF VAR036 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("DECISIONS AND RECOMMENDATIONS: ",VAR037A, "%", IF VAR038 = 0
   THEN "  NOT VALID" ELSE IF VAR038 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("ESTIMATES:                     ",VAR039A, "%", IF VAR040 = 0
   THEN "  NOT VALID" ELSE IF VAR040 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("INTELL ANNEXES TO OPORDS:      ",VAR041A, "%", IF VAR042 = 0
   THEN "  NOT VALID" ELSE IF VAR042 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("INTELL COLLECTION PLANS:       ",VAR043A, "%", IF VAR044 = 0
   THEN "  NOT VALID" ELSE IF VAR044 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("INTELL COLLECTION TASKING:     ",VAR045A, "%", IF VAR046 = 0
   THEN "  NOT VALID" ELSE IF VAR046 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("INTELLIGENCE REPORTS:          ",VAR047A, "%", IF VAR048 = 0
   THEN "  NOT VALID" ELSE IF VAR048 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
WRITE ("INTELLIGENCE STUDIES:          ",VAR049A, "%", IF VAR050 = 0
   THEN "  NOT VALID" ELSE IF VAR050 = 1 THEN "  VALID" ELSE
   "  NO RESPONSE");
```

```
    WRITE ("INTERFACE ADP-TELECOMMS:          ",VAR051A, "%", IF VAR052 = 0
       THEN "  NOT VALID" ELSE IF VAR052 = 1 THEN "  VALID" ELSE
       "  NO RESPONSE");
    WRITE ("ORDERS OF BATTLE:                 ",VAR053A, "%", IF VAR054 = 0
       THEN "  NOT VALID" ELSE IF VAR054 = 1 THEN "  VALID" ELSE
       "  NO RESPONSE");
    WRITE ("PHYSICAL SECURITY:                ",VAR055A, "%", IF VAR056 = 0
       THEN "  NOT VALID" ELSE IF VAR056 = 1 THEN "  VALID" ELSE
       "  NO RESPONSE");
    WRITE ("TACTICAL PLOTS:                   ",VAR057A, "%", IF VAR058 = 0
       THEN "  NOT VALID" ELSE IF VAR058 = 1 THEN "  VALID" ELSE
       "  NO RESPONSE");
    IF VAR061 ¬= " " THEN WRITE ("* ", VAR061, "   ", VAR063A, "% ",
       IF (VAR062 = 0) OR (VAR062 = 999) THEN " " ELSE VAR062A);
    IF VAR064 ¬= " " THEN WRITE ("* ", VAR064, "   ", VAR066A, "% ",
       IF (VAR065 = 0) OR (VAR065 = 999) THEN " " ELSE VAR065A);
    IF VAR069 ¬= " " THEN WRITE ("* ", VAR069, "   ", VAR071A, "% ",
       IF (VAR070 = 0) OR (VAR070 = 999) THEN " " ELSE VAR070A);
    IF VAR072 ¬= " " THEN WRITE ("* ", VAR072, "   ", VAR074A, "% ",
       IF (VAR073 = 0) OR (VAR073 = 999) THEN " " ELSE VAR073A);
    IF VAR077 ¬= " " THEN WRITE ("* ", VAR077, "   ", VAR079A, "% ",
       IF (VAR078 = 0) OR (VAR078 = 999) THEN " " ELSE VAR078A);
    IF ¬((VAR080 = 0) OR (VAR080 = 999)) THEN WRITE
       ("# PERCENT NON-INTELLIGENCE OUTPUTS:  ", VAR080A, "%");
    WRITE (" ");
    WRITE ("COMMENTS: ", VAR083);
    WRITE ("ARE COMMENTS CONTINUED? ", IF VAR084 = 0 THEN "NO COMMENTS"
       ELSE IF VAR084 = 1 THEN "NO FURTHER COMMENTS" ELSE "CONTINUED");
    WRITE (" ");
    WRITE (VAR008A, ".", VAR009A);
    WRITE (VAR023A, ".", VAR024A);
    WRITE (VAR059A, ".", VAR060A);
    WRITE (VAR067A, ".", VAR068A);
    WRITE (VAR075A, ".", VAR076A);
    WRITE (VAR081A, ".", VAR082A);
    WRITE (VAR085A, ".", VAR086A);
    IOCONTROL (5);
    END;

READ (QCASES);
FOR I := 1 UNTIL QCASES DO
BEGIN GETCASE;
DISPLAYCASE;
END;
IOCONTROL (3);
WRITE ("NUMBER CASES =", QCASES);
END.
```

```
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//LINK.SYSPRINT DD DUMMY
//GO.SYSPRINT DD SYSOUT=O,SPACE=(CYL,(5,2))
//GO.SYSIN DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),LABEL=(,,,IN),
//     DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),DSNAME=S2600.QCARDS
```

APPENDIX F

SAMPLE C

EXAMPLE OUTPUT FROM ALGOL DISPLAY PROGRAM

```
COMMAND NAME: NOSIC
BILLET SEQUENCE CODE: 19010
BILLET TITLE: OPERATIONS OFFICER
UNIT IDENTIFICATION CODE: 30883
CONUS-OVERSEAS CODE: 0 = CONUS
COUNTRY-STATE CODE: DC
CODER CODE: 2 = LT FOSTER

RESPONDENT'S NAME: /SINCLAIR /S. /MARTEL
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 36
RESPONDENT'S DESIGNATOR HISTORY: 1630, 1635
BILLET SUBSPECIALTY CODE: 7210E
RESPONDENT'S SUBSPECIALTY CODE: 00000
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: 18
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 14
MONTHS IN THIS BILLET: 06

INTELL OFFICE ADMINISTRATION:  076%  VALID
BRIEFS AND DEBRIEFS:           008%  VALID
BUDGETS AND BUDGETING:         000%  NO RESPONSE
CHARTS AND AUDIO-VISUAL AIDS:  000%  NO RESPONSE
COUNTERINTELLIGENCE STUDIES:   000%  NO RESPONSE
DATA ANALYSIS:                 000%  NO RESPONSE
DECISIONS AND RECOMMENDATIONS: 008%  VALID
ESTIMATES:                     000%  NO RESPONSE
INTELL ANNEXES TO OPORDS:      000%  NO RESPONSE
INTELL COLLECTION PLANS:       000%  NO RESPONSE
INTELL COLLECTION TASKING:     000%  NO RESPONSE
INTELLIGENCE REPORTS:          000%  NO RESPONSE
INTELLIGENCE STUDIES:          000%  NO RESPONSE
INTERFACE ADP-TELECOMMS:       000%  NO RESPONSE
ORDERS OF BATTLE:              000%  NO RESPONSE
PHYSICAL SECURITY:             000%  NO RESPONSE
TACTICAL PLOTS:                000%  NO RESPONSE
* CURRENT INTEL (OPINTEL) PRODUCTN   008% BDI

COMMENTS: EXTSIV OPINTEL EXP PREREQUISITE. NATIONAL SENIOR INTEL COURSE BENEFICIAL.
ARE COMMENTS CONTINUED? NO FURTHER COMMENTS

200.1
200.2
200.3
200.4
200.5
200.6
200.7
```

```
COMMAND NAME: NOSIC
BILLET SEQUENCE CODE: 19070
BILLET TITLE: HEAD,MARITIME OPERATIONS BRANCH
UNIT IDENTIFICATION CODE: 30883
CONUS-OVERSEAS CODE: 0 = CONUS
COUNTRY-STATE CODE: DC
CODER CODE: 2 = LT FOSTER

RESPONDENT'S NAME: /LOUIS /A. /ROGERS
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 35
RESPONDENT'S DESIGNATOR HISTORY: 1110
BILLET SUBSPECIALTY CODE: 7210E
RESPONDENT'S SUBSPECIALTY CODE: 7210E
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: 3
FIRST INTELL BILLET?: YES
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 00
MONTHS IN THIS BILLET: 21

INTELL OFFICE ADMINISTRATION:    020%  VALID
BRIEFS AND DEBRIEFS:             003%  VALID
BUDGETS AND BUDGETING:           000%  VALID
CHARTS AND AUDIO-VISUAL AIDS:    000%  VALID
COUNTERINTELLIGENCE STUDIES:     000%  VALID
DATA ANALYSIS:                   005%  VALID
DECISIONS AND RECOMMENDATIONS:   020%  VALID
ESTIMATES:                       010%  VALID
INTELL ANNEXES TO OPORDS:        000%  VALID
INTELL COLLECTION PLANS:         000%  VALID
INTELL COLLECTION TASKING:       000%  VALID
INTELLIGENCE REPORTS:            000%  VALID
INTELLIGENCE STUDIES:            002%  VALID
INTERFACE ADP-TELECOMMS:         010%  NOT VALID
ORDERS OF BATTLE:                000%  VALID
PHYSICAL SECURITY:               002%  VALID
TACTICAL PLOTS:                  000%  VALID
* COUNSELING SUBORDINATES              003% T
* ESTABLISHING REQUIREMENTS            005% B
* INTER AGENCY LIAISON                 005% F
* OUTGOING REPORTS                     015% A

COMMENTS: STRESS:WRITING,GS REGS,MGMT BY OBJECTIVES,COMM SKILLS AND BRIEFING
ARE COMMENTS CONTINUED? NO FURTHER COMMENTS

201.1
201.2
201.3
201.4
201.5
201.6
201.7
```

```
COMMAND NAME: NOSIC
BILLET SEQUENCE CODE: 19300
BILLET TITLE: ADP OPINTEL PRODUCTION MANAGER
UNIT IDENTIFICATION CODE: 30883
CONUS-OVERSEAS CODE: 0 = CONUS
COUNTRY-STATE CODE: DC
CODER CODE: 2 = LT FOSTER

RESPONDENT'S NAME: /EUGENE /J. /RAIRDAN
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 33
RESPONDENT'S DESIGNATOR HISTORY: 1630, 1350
BILLET SUBSPECIALTY CODE: 7210
RESPONDENT'S SUBSPECIALTY CODE: 9502P
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: 57
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 08
MONTHS IN THIS BILLET: 02

INTELL OFFICE ADMINISTRATION:     999%  NO RESPONSE
BRIEFS AND DEBRIEFS:              999%  NO RESPONSE
BUDGETS AND BUDGETING:            999%  NO RESPONSE
CHARTS AND AUDIO-VISUAL AIDS:     999%  NO RESPONSE
COUNTERINTELLIGENCE STUDIES:      999%  NO RESPONSE
DATA ANALYSIS:                    999%  NO RESPONSE
DECISIONS AND RECOMMENDATIONS:    999%  NO RESPONSE
ESTIMATES:                        999%  NO RESPONSE
INTELL ANNEXES TO OPORDS:         999%  NO RESPONSE
INTELL COLLECTION PLANS:          999%  NO RESPONSE
INTELL COLLECTION TASKING:        999%  NO RESPONSE
INTELLIGENCE REPORTS:             999%  NO RESPONSE
INTELLIGENCE STUDIES:             999%  NO RESPONSE
INTERFACE ADP-TELECOMMS:          999%  NO RESPONSE
ORDERS OF BATTLE:                 999%  NO RESPONSE
PHYSICAL SECURITY:                999%  NO RESPONSE
TACTICAL PLOTS:                   999%  NO RESPONSE

COMMENTS: UNABLE TO ESTIMATE DUE TO SHORT TIME IN BILLET.
ARE COMMENTS CONTINUED? NO FURTHER COMMENTS

202.1
202.2
202.3
202.4
202.5
202.6
202.7
```

COMMAND NAME: COMNAVINTCOM
BILLET SEQUENCE CODE: 50250
BILLET TITLE: HEAD SPECIAL SEC DET PENTAGON BRANCH
UNIT IDENTIFICATION CODE: 00015
CONUS-OVERSEAS CODE: 0 = CONUS
COUNTRY-STATE CODE: DC
CODER CODE: 3 = LT BICKELL

RESPONDENT'S NAME: /VINCENT /H.#/DE /VITO
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 43
RESPONDENT'S DESIGNATOR HISTORY: 1110, 1100, 1108
BILLET SUBSPECIALTY CODE: NONE LISTED
RESPONDENT'S SUBSPECIALTY CODE: 7210E
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: 1
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 03
MONTHS IN THIS BILLET: 60

INTELL OFFICE ADMINISTRATION:	030%	NOT VALID
BRIEFS AND DEBRIEFS:	030%	VALID
BUDGETS AND BUDGETING:	000%	NO RESPONSE
CHARTS AND AUDIO-VISUAL AIDS:	000%	NO RESPONSE
COUNTERINTELLIGENCE STUDIES:	000%	NO RESPONSE
DATA ANALYSIS:	000%	NO RESPONSE
DECISIONS AND RECOMMENDATIONS:	005%	VALID
ESTIMATES:	000%	NO RESPONSE
INTELL ANNEXES TO OPORDS:	000%	NO RESPONSE
INTELL COLLECTION PLANS:	000%	NO RESPONSE
INTELL COLLECTION TASKING:	000%	NO RESPONSE
INTELLIGENCE REPORTS:	000%	NO RESPONSE
INTELLIGENCE STUDIES:	000%	NO RESPONSE
INTERFACE ADP-TELECOMMS:	000%	NO RESPONSE
ORDERS OF BATTLE:	000%	NO RESPONSE
PHYSICAL SECURITY:	035%	NOT VALID
TACTICAL PLOTS:	000%	NO RESPONSE

COMMENTS: DESIGNATORS WERE 1108,1105,1315,1310,1100,1110
ARE COMMENTS CONTINUED? NO FURTHER COMMENTS

402.1
402.2
402.3
402.4
402.5
402.6
402.7

COMMAND NAME: COMNAVINTCOM
BILLET SEQUENCE CODE: 01300
BILLET TITLE: ASST OPS COORDINATION OFFICER
UNIT IDENTIFICATION CODE: 00015
CONUS-OVERSEAS CODE: 0 = CONUS
COUNTRY-STATE CODE: VA
CODER CODE: 3 = LT BICKELL

RESPONDENT'S NAME: /HOLLIS /W. /HARMON
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 32
RESPONDENT'S DESIGNATOR HISTORY: 1630, 1310, 1100
BILLET SUBSPECIALTY CODE: NONE LISTED
RESPONDENT'S SUBSPECIALTY CODE: NONE LISTED
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: 2
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 03
MONTHS IN THIS BILLET: 06

INTELL OFFICE ADMINISTRATION:	026%	VALID
BRIEFS AND DEBRIEFS:	005%	VALID
BUDGETS AND BUDGETING:	001%	VALID
CHARTS AND AUDIO-VISUAL AIDS:	005%	VALID
COUNTERINTELLIGENCE STUDIES:	000%	VALID
DATA ANALYSIS:	001%	NOT VALID
DECISIONS AND RECOMMENDATIONS:	025%	VALID
ESTIMATES:	005%	VALID
INTELL ANNEXES TO OPORDS:	000%	VALID
INTELL COLLECTION PLANS:	012%	NOT VALID
INTELL COLLECTION TASKING:	000%	VALID
INTELLIGENCE REPORTS:	000%	VALID
INTELLIGENCE STUDIES:	005%	VALID
INTERFACE ADP-TELECOMMS:	001%	NOT VALID
ORDERS OF BATTLE:	000%	VALID
PHYSICAL SECURITY:	001%	NOT VALID
TACTICAL PLOTS:	000%	NOT VALID
# PERCENT NON-INTELLIGENCE OUTPUTS:		013%

COMMENTS:
ARE COMMENTS CONTINUED? NO COMMENTS

409.1
409.2
409.3
409.4
409.5
409.6
409.7

COMMAND NAME: NISO NEW YORK
BILLET SEQUENCE CODE: 00100
BILLET TITLE: COMMANDING OFFICER
UNIT IDENTIFICATION CODE: 63054
CONUS-OVERSEAS CODE: 0 = CONUS
COUNTRY-STATE CODE: NY
CODER CODE: 4 = LT HUBER

RESPONDENT'S NAME: /GEORGE /I. /KNOWLES
RESPONDENT'S RANK: CAPT
RESPONDENT'S AGE: 43
RESPONDENT'S DESIGNATOR HISTORY: 1110, 1100, 1105
BILLET SUBSPECIALTY CODE: 7210E
RESPONDENT'S SUBSPECIALTY CODE: 7160P
EDUCATIONAL LEVEL: MASTERS LEVEL
TRAINING USED IN THIS BILLET: NONE LISTED
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 04
MONTHS IN THIS BILLET: 10

INTELL OFFICE ADMINISTRATION:	050%	VALID
BRIEFS AND DEBRIEFS:	001%	NOT VALID
BUDGETS AND BUDGETING:	005%	VALID
CHARTS AND AUDIO-VISUAL AIDS:	000%	NOT VALID
COUNTERINTELLIGENCE STUDIES:	001%	NOT VALID
DATA ANALYSIS:	003%	NOT VALID
DECISIONS AND RECOMMENDATIONS:	005%	NOT VALID
ESTIMATES:	001%	NOT VALID
INTELL ANNEXES TO OPORDS:	000%	NOT VALID
INTELL COLLECTION PLANS:	001%	NOT VALID
INTELL COLLECTION TASKING:	001%	NOT VALID
INTELLIGENCE REPORTS:	000%	NOT VALID
INTELLIGENCE STUDIES:	001%	NOT VALID
INTERFACE ADP-TELECOMMS:	004%	VALID
ORDERS OF BATTLE:	000%	NOT VALID
PHYSICAL SECURITY:	004%	VALID
TACTICAL PLOTS:	000%	NOT VALID
* INVESTIGATORY PROCESS		003% ABF
* COUNTERINTELLIGENCE OPERATIONS		005% ABH
# PERCENT NON-INTELLIGENCE OUTPUTS:		015%

COMMENTS:
ARE COMMENTS CONTINUED? NO COMMENTS

607.1
607.2
607.3
607.4
607.5
607.6
607.7

```
COMMAND NAME: COMCRUDESGRU EIGHT
BILLET SEQUENCE CODE: 01800
BILLET TITLE: STAFF INTELLIGENCE OFFICER
UNIT IDENTIFICATION CODE: 99922
CONUS-OVERSEAS CODE: 3 = ATLANTIC/MED AFLOAT
COUNTRY-STATE CODE: AF
CODER CODE: 4 = LT HUBER

RESPONDENT'S NAME: /WILLIAM /EDWARD /DUNCAN
RESPONDENT'S RANK: CDR
RESPONDENT'S AGE: 38
RESPONDENT'S DESIGNATOR HISTORY: 1630, 1100
BILLET SUBSPECIALTY CODE: 7210E
RESPONDENT'S SUBSPECIALTY CODE: 00000
EDUCATIONAL LEVEL: POSTGRAD STUDIES
TRAINING USED IN THIS BILLET: NONE LISTED
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 11
MONTHS IN THIS BILLET: 13

INTELL OFFICE ADMINISTRATION:  014%  VALID
BRIEFS AND DEBRIEFS:           010%  VALID
BUDGETS AND BUDGETING:         000%  VALID
CHARTS AND AUDIO-VISUAL AIDS:  005%  NOT VALID
COUNTERINTELLIGENCE STUDIES:   001%  VALID
DATA ANALYSIS:                 015%  VALID
DECISIONS AND RECOMMENDATIONS: 010%  VALID
ESTIMATES:                     005%  VALID
INTELL ANNEXES TO OPORDS:      010%  VALID
INTELL COLLECTION PLANS:       002%  VALID
INTELL COLLECTION TASKING:     003%  VALID
INTELLIGENCE REPORTS:          001%  VALID
INTELLIGENCE STUDIES:          005%  VALID
INTERFACE ADP-TELECOMMS:       005%  VALID
ORDERS OF BATTLE:              002%  VALID
PHYSICAL SECURITY:             002%  NOT VALID
TACTICAL PLOTS:                005%  VALID
# PERCENT NON-INTELLIGENCE OUTPUTS:  005%

COMMENTS: OUTPUT VALIDITY FUNCTION OF BILLET, ORGANIZATION, AND MISSION.
ARE COMMENTS CONTINUED? NO FURTHER COMMENTS

612.1
612.2
612.3
612.4
612.5
612.6
612.7
```

COMMAND NAME: COMSUBPAC
BILLET SEQUENCE CODE: 95000
BILLET TITLE: SSO
UNIT IDENTIFICATION CODE: 57020
CONUS-OVERSEAS CODE: 2 = PACIFIC
COUNTRY-STATE CODE: HI
CODER CODE: 5 = LT WATSON

RESPONDENT'S NAME: /H. /W. /LEEKE
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 33
RESPONDENT'S DESIGNATOR HISTORY: 1120
BILLET SUBSPECIALTY CODE: NONE LISTED
RESPONDENT'S SUBSPECIALTY CODE: NONE LISTED
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: 12
FIRST INTELL BILLET?: YES
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 00
MONTHS IN THIS BILLET: 30

INTELL OFFICE ADMINISTRATION:	025%	VALID
BRIEFS AND DEBRIEFS:	010%	VALID
BUDGETS AND BUDGETING:	001%	VALID
CHARTS AND AUDIO-VISUAL AIDS:	001%	NOT VALID
COUNTERINTELLIGENCE STUDIES:	000%	NO RESPONSE
DATA ANALYSIS:	000%	NO RESPONSE
DECISIONS AND RECOMMENDATIONS:	012%	VALID
ESTIMATES:	000%	NO RESPONSE
INTELL ANNEXES TO OPORDS:	001%	VALID
INTELL COLLECTION PLANS:	000%	NO RESPONSE
INTELL COLLECTION TASKING:	008%	VALID
INTELLIGENCE REPORTS:	000%	NO RESPONSE
INTELLIGENCE STUDIES:	015%	VALID
INTERFACE ADP-TELECOMMS:	000%	NO RESPONSE
ORDERS OF BATTLE:	000%	NO RESPONSE
PHYSICAL SECURITY:	006%	VALID
TACTICAL PLOTS:	001%	VALID
# PERCENT NON-INTELLIGENCE OUTPUTS:	020%	

COMMENTS:
ARE COMMENTS CONTINUED? NO COMMENTS

811.1
811.2
811.3
811.4
811.5
811.6
811.7

COMMAND NAME: COMTHIRDFLEET
BILLET SEQUENCE CODE: NONE LISTED
BILLET TITLE: INTELL PLANS SPEC OPS
UNIT IDENTIFICATION CODE: 57087
CONUS-OVERSEAS CODE: 2 = PACIFIC
COUNTRY-STATE CODE: HI
CODER CODE: 5 = LT WATSON

RESPONDENT'S NAME: #/HUCHTHAUSEN
RESPONDENT'S RANK: LCDR
RESPONDENT'S AGE: 35
RESPONDENT'S DESIGNATOR HISTORY: 1630, 1100
BILLET SUBSPECIALTY CODE: NONE LISTED
RESPONDENT'S SUBSPECIALTY CODE: NONE LISTED
EDUCATIONAL LEVEL: BACHELORS LEVEL
TRAINING USED IN THIS BILLET: NONE LISTED
FIRST INTELL BILLET?: NO
YEARS PREVIOUS INTELLIGENCE EXPERIENCE: 02
MONTHS IN THIS BILLET: 16

INTELL OFFICE ADMINISTRATION:	999%	NO RESPONSE
BRIEFS AND DEBRIEFS:	999%	NO RESPONSE
BUDGETS AND BUDGETING:	999%	NO RESPONSE
CHARTS AND AUDIO-VISUAL AIDS:	999%	NO RESPONSE
COUNTERINTELLIGENCE STUDIES:	999%	NO RESPONSE
DATA ANALYSIS:	999%	NO RESPONSE
DECISIONS AND RECOMMENDATIONS:	999%	NO RESPONSE
ESTIMATES:	999%	NO RESPONSE
INTELL ANNEXES TO OPORDS:	999%	NO RESPONSE
INTELL COLLECTION PLANS:	999%	NO RESPONSE
INTELL COLLECTION TASKING:	999%	NO RESPONSE
INTELLIGENCE REPORTS:	999%	NO RESPONSE
INTELLIGENCE STUDIES:	999%	NO RESPONSE
INTERFACE ADP-TELECOMMS:	999%	NO RESPONSE
ORDERS OF BATTLE:	999%	NO RESPONSE
PHYSICAL SECURITY:	999%	NO RESPONSE
TACTICAL PLOTS:	999%	NO RESPONSE

COMMENTS: QUESTNRE NOT RCD
ARE COMMENTS CONTINUED? NO FURTHER COMMENTS

883.1
883.2
883.3
883.4
883.5
883.6
883.7

APPENDIX F

SAMPLE D

ALGOL SOURCE PROGRAM TO MERGE QCARDS/TCARDS/ACARDS AND CLEAN-UP DATA BASE

```
//HUBER003 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=4
// EXEC ALGWCLG,PARM.GO='SIZE=150K',REGION=250K
//ALGOL.SYSIN DD *
%ALGOL TIME=60,SIZE=150K
BEGIN

STRING (25) VAR001;
STRING (37) VAR003;
STRING (2) VAR006;
STRING (40) VAR010;
STRING (32) VAR061, VAR064, VAR069, VAR072, VAR077, ADDVARIABLE;
STRING (75) VAR083;
STRING (1) VAR005A, VAR007A, VAR009A, VAR011A, VAR018A, VAR020A,
   VAR024A, VAR026A, VAR028A, VAR030A, VAR032A, VAR034A, VAR036A,
   VAR038A, VAR040A, VAR042A, VAR044A, VAR045A, VAR048A, VAR050A,
   VAR052A, VAR054A, VAR056A, VAR058A, VAR060A, VAR068A, VAR076A,
   VAR082A, VAR084A, VAR086A;
STRING (2) VAR012A, VAR021A, VAR022A;
STRING (3) VAR008A, VAR023A, VAR025A, VAR027A, VAR029A, VAR031A,
   VAR033A, VAR035A, VAR037A, VAR039A, VAR041A, VAR043A, VAR045A,
   VAR047A, VAR049A, VAR051A, VAR053A, VAR055A, VAR057A, VAR059A,
   VAR062A, VAR063A, VAR065A, VAR066A, VAR067A, VAR070A, VAR071A,
   VAR073A, VAR074A, VAR075A, VAR078A, VAR079A, VAR080A, VAR081A,
   VAR085A, ACODE;
STRING (4) VAR013A, VAR014A, VAR015A;
STRING (5) VAR002A, VAR004A, VAR016, VAR017, VAR019A, TRAININFO;
STRING (80) BUFFER;
INTEGER VAR002, VAR004, VAR005, VAR007, VAR008, VAR009, VAR011,
   VAR012, VAR013, VAR014, VAR015, VAR018, VAR019, VAR020, VAR021,
   VAR022, VAR023, VAR024, VAR025, VAR026, VAR027, VAR028, VAR029,
   VAR030, VAR031, VAR032, VAR033, VAR034, VAR035, VAR036, VAR037,
   VAR038, VAR039, VAR040, VAR041, VAR042, VAR043, VAR044, VAR045,
   VAR046, VAR047, VAR048, VAR049, VAR050, VAR051, VAR052, VAR053,
   VAR054, VAR055, VAR056, VAR057, VAR058, VAR059, VAR060, VAR062,
   VAR063, VAR065, VAR066, VAR067, VAR068, VAR070, VAR071, VAR073,
   VAR074, VAR075, VAR076, VAR078, VAR079, VAR080, VAR081, VAR082,
   VAR084, VAR085, VAR086, QCASES, TCARDS, ACARDS, TCASENO, ACASENO;

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;
```

```
PROCEDURE REWIND11; FORTRAN "RWND11";

PROCEDURE REWIND12; FORTRAN "RWND12";

PROCEDURE READ11 (STRING (80) RESULT BUF); FORTRAN "READ11";

PROCEDURE READ12 (STRING (80) RESULT BUF); FORTRAN "READ12";

PROCEDURE PUNCHCARD (STRING (80) VALUE BUF); FORTRAN "PUNCH";

PROCEDURE GETCASE;
   FOR T := 1 UNTIL 7 DO
   BEGIN
   READ11(BUFFER);
   CASE T OF BEGIN
      IMAGE1;
      IMAGE2;
      IMAGE3;
      IMAGE4;
      IMAGE5;
      IMAGE6;
      IMAGE7 END;
   END;

PROCEDURE GETADDCARD;
   BEGIN
   READ12 (BUFFER);
   ACASENO := CONVERT(BUFFER(0|3));
   ADDVARIABLE := BUFFER(4|32);
   ACODE := BUFFER(37|3);
   ACARDS := ACARDS - 1;
   END;

PROCEDURE ADDTRAININFO;
   BEGIN
   WHILE (TCASENO < VAR008) AND (TCARDS > 0) DO
      BEGIN
      TCARDS := TCARDS - 1;
      READ(TCASENO, TRAININFO);
      END;
   VAR019A := IF TCASENO = VAR008 THEN TRAININFO ELSE "      ";
   END;

PROCEDURE ADDOUTPUTCODES;
   BEGIN
   CODELOOP: WHILE (ACASENO < VAR008) AND (ACARDS > 0) DO GETADDCARD;
   IF ACASENO = VAR008 THEN
   BEGIN
```

```
    IF VAR061 = ADDVARIABLE THEN VAR062A := ACODE ELSE
       IF VAR064 = ADDVARIABLE THEN VAR065A := ACODE ELSE
       IF VAR069 = ADDVARIABLE THEN VAR070A := ACODE ELSE
       IF VAR072 = ADDVARIABLE THEN VAR073A := ACODE ELSE
       IF VAR077 = ADDVARIABLE THEN VAR078A := ACODE;
    ACASENO := ACASENO - 1;
    GO TO CODELOOP;
    END;
    END;

PROCEDURE PUNCHNEWCASE;
    FOR I := 1 UNTIL 7 DO BEGIN
       CASE I OF BEGIN
       REIMAGE1;
       REIMAGE2;
       REIMAGE3;
       REIMAGE4;
       REIMAGE5;
       REIMAGE6;
       REIMAGE7 END;
    PUNCHCARD(BUFFER);
    END;

PROCEDURE IMAGE1;
    BEGIN
    VAR001 := BUFFER(0|25);
    VAR002 := CONVERT (BUFFER(25|5));
    VAR002A := BUFFER(25|5);
    VAR003 := BUFFER(30|37);
    VAR004 := CONVERT (BUFFER(67|5));
    VAR004A := BUFFER(57|5);
    VAR005 := CONVERT (BUFFER(72|1));
    VAR005A := BUFFER(72|1);
    VAR006 := BUFFER (73|2);
    VAR007 := CONVERT (BUFFER(75|1));
    VAR007A := BUFFER(75|1);
    VAR008 := CONVERT (BUFFER(76|3));
    VAR008A := BUFFER(76|3);
    VAR009 := CONVERT (BUFFER(79|1));
    VAR009A := BUFFER(79|1);
    END;

PROCEDURE REIMAGE1;
    BEGIN
    BUFFER := " ";
    BUFFER(0|25) := VAR001;
    BUFFER(25|5) := VAR002A;
    BUFFER(30|37) := VAR003;
```

```
    BUFFER(67|5) := VAR004A;
    BUFFER(72|1) := VAR005A;
    BUFFER(73|2) := VAR006;
    BUFFER(75|1) := VAR007A;
    BUFFER(76|3) := VAR008A;
    BUFFER(79|1) := VAR009A;
    END;

PROCEDURE IMAGE2;
    BEGIN
    VAR010 := BUFFER(0|40);
    VAR011 := CONVERT (BUFFER(40|1));
    VAR011A := BUFFER(40|1);
    VAR012 := CONVERT (BUFFER(41|2));
    VAR012A := BUFFER(41|2);
    VAR013 := CONVERT (BUFFER(43|4));
    VAR013A := BUFFER(43|4);
    VAR014 := CONVERT (BUFFER(47|4));
    VAR014A := BUFFER(47|4);
    VAR015 := CONVERT (BUFFER(51|4));
    VAR015A := BUFFER(51|4);
    VAR016 := BUFFER(55|5);
    VAR017 := BUFFER(60|5);
    VAR018 := CONVERT (BUFFER(65|1));
    VAR018A := BUFFER(65|1);
    VAR019 := CONVERT (BUFFER(66|5));
    VAR019A := BUFFER(66|5);
    VAR020 := CONVERT (BUFFER(71|1));
    VAR020A := BUFFER(71|1);
    VAR021 := CONVERT (BUFFER(72|2));
    VAR021A := BUFFER(72|2);
    VAR022 := CONVERT (BUFFER(74|2));
    VAR022A := BUFFER(74|2);
    VAR023 := CONVERT (BUFFER(76|3));
    VAR023A := BUFFER(76|3);
    VAR024 := CONVERT (BUFFER(79|1));
    VAR024A := BUFFER(79|1);
    END;

PROCEDURE REIMAGE2;
    BEGIN
    BUFFER := " ";
    BUFFER(0|40) := VAR010;
    BUFFER(40|1) := VAR011A;
    BUFFER(41|2) := VAR012A;
    BUFFER(43|4) := VAR013A;
    BUFFER(47|4) := VAR014A;
    BUFFER(51|4) := VAR015A;
```

```
    BUFFER(55|5) := VAR016;
    BUFFER(60|5) := VAR017;
    BUFFER(65|1) := VAR018A;
    BUFFER(66|5) := VAR019A;
    BUFFER(71|1) := VAR020A;
    BUFFER(72|2) := VAR021A;
    BUFFER(74|2) := VAR022A;
    BUFFER(76|3) := VAR023A;
    BUFFER(79|1) := VAR024A;
    END;

PROCEDURE IMAGE3;
    BEGIN
    VAR025 := CONVERT (BUFFER(0|3));
    VAR025A := BUFFER(0|3);
    VAR026 := CONVERT (BUFFER(3|1));
    VAR026A := BUFFER(3|1);
    VAR027 := CONVERT (BUFFER(4|3));
    VAR027A := BUFFER(4|3);
    VAR028 := CONVERT (BUFFER(7|1));
    VAR028A := BUFFER(7|1);
    VAR029 := CONVERT (BUFFER(8|3));
    VAR029A := BUFFER(8|3);
    VAR030 := CONVERT (BUFFER(11|1));
    VAR030A := BUFFER(11|1);
    VAR031 := CONVERT (BUFFER(12|3));
    VAR031A := BUFFER(12|3);
    VAR032 := CONVERT (BUFFER(15|1));
    VAR032A := BUFFER(15|1);
    VAR033 := CONVERT (BUFFER(16|3));
    VAR033A := BUFFER(16|3);
    VAR034 := CONVERT (BUFFER(19|1));
    VAR034A := BUFFER(19|1);
    VAR035 := CONVERT (BUFFER(20|3));
    VAR035A := BUFFER(20|3);
    VAR036 := CONVERT (BUFFER(23|1));
    VAR036A := BUFFER(23|1);
    VAR037 := CONVERT (BUFFER(24|3));
    VAR037A := BUFFER(24|3);
    VAR038 := CONVERT (BUFFER(27|1));
    VAR038A := BUFFER(27|1);
    VAR039 := CONVERT (BUFFER(28|3));
    VAR039A := BUFFER(28|3);
    VAR040 := CONVERT (BUFFER(31|1));
    VAR040A := BUFFER(31|1);
    VAR041 := CONVERT (BUFFER(32|3));
    VAR041A := BUFFER(32|3);
    VAR042 := CONVERT (BUFFER(35|1));
```

```
    VAR042A := BUFFER(35|1);
    VAR043 := CONVERT (BUFFER(36|3));
    VAR043A := BUFFER(36|3);
    VAR044 := CONVERT (BUFFER(39|1));
    VAR044A := BUFFER(39|1);
    VAR045 := CONVERT (BUFFER(40|3));
    VAR045A := BUFFER(40|3);
    VAR046 := CONVERT (BUFFER(43|1));
    VAR046A := BUFFER(43|1);
    VAR047 := CONVERT (BUFFER(44|3));
    VAR047A := BUFFER(44|3);
    VAR048 := CONVERT (BUFFER(47|1));
    VAR048A := BUFFER(47|1);
    VAR049 := CONVERT (BUFFER(48|3));
    VAR049A := BUFFER(48|3);
    VAR050 := CONVERT (BUFFER(51|1));
    VAR050A := BUFFER(51|1);
    VAR051 := CONVERT (BUFFER(52|3));
    VAR051A := BUFFER(52|3);
    VAR052 := CONVERT (BUFFER(55|1));
    VAR052A := BUFFER(55|1);
    VAR053 := CONVERT (BUFFER(56|3));
    VAR053A := BUFFER(56|3);
    VAR054 := CONVERT (BUFFER(59|1));
    VAR054A := BUFFER(59|1);
    VAR055 := CONVERT (BUFFER(60|3));
    VAR055A := BUFFER(60|3);
    VAR056 := CONVERT (BUFFER(63|1));
    VAR056A := BUFFER(63|1);
    VAR057 := CONVERT (BUFFER(64|3));
    VAR057A := BUFFER(64|3);
    VAR058 := CONVERT (BUFFER(67|1));
    VAR058A := BUFFER(67|1);
    VAR059 := CONVERT (BUFFER(76|3));
    VAR059A := BUFFER(76|3);
    VAR060 := CONVERT (BUFFER(79|1));
    VAR060A := BUFFER(79|1);
    END;

PROCEDURE REIMAGE3;
    BEGIN
    BUFFER := " ";
    BUFFER(0|3) := VAR025A;
    BUFFER(3|1) := VAR026A;
    BUFFER(4|3) := VAR027A;
    BUFFER(7|1) := VAR028A;
    BUFFER(8|3) := VAR029A;
    BUFFER(11|1) := VAR030A;
```

```
    BUFFER(12|3) := VAR031A;
    BUFFER(15|1) := VAR032A;
    BUFFER(16|3) := VAR033A;
    BUFFER(19|1) := VAR034A;
    BUFFER(20|3) := VAR035A;
    BUFFER(23|1) := VAR036A;
    BUFFER(24|3) := VAR037A;
    BUFFER(27|1) := VAR038A;
    BUFFER(28|3) := VAR039A;
    BUFFER(31|1) := VAR040A;
    BUFFER(32|3) := VAR041A;
    BUFFER(35|1) := VAR042A;
    BUFFER(36|3) := VAR043A;
    BUFFER(39|1) := VAR044A;
    BUFFER(40|3) := VAR045A;
    BUFFER(43|1) := VAR046A;
    BUFFER(44|3) := VAR047A;
    BUFFER(47|1) := VAR048A;
    BUFFER(48|3) := VAR049A;
    BUFFER(51|1) := VAR050A;
    BUFFER(52|3) := VAR051A;
    BUFFER(55|1) := VAR052A;
    BUFFER(56|3) := VAR053A;
    BUFFER(59|1) := VAR054A;
    BUFFER(60|3) := VAR055A;
    BUFFER(63|1) := VAR056A;
    BUFFER(64|3) := VAR057A;
    BUFFER(67|1) := VAR058A;
    BUFFER(76|3) := VAR059A;
    BUFFER(79|1) := VAR060A;
    END;

PROCEDURE IMAGE4;
    BEGIN
    VAR061 := BUFFER(0|32);
    VAR062 := CONVERT (BUFFER(32|3));
    VAR062A := BUFFER(32|3);
    VAR063 := CONVERT (BUFFER(35|3));
    VAR063A := BUFFER(35|3);
    VAR064 := BUFFER(38|32);
    VAR065 := CONVERT (BUFFER(70|3));
    VAR065A := BUFFER(70|3);
    VAR066 := CONVERT (BUFFER(73|3));
    VAR066A := BUFFER(73|3);
    VAR067 := CONVERT (BUFFER(76|3));
    VAR067A := BUFFER(76|3);
    VAR068 := CONVERT (BUFFER(79|1));
    VAR068A := BUFFER(79|1);
```

```
    END;

PROCEDURE REIMAGE4;
    BEGIN
    BUFFER := " ";
    BUFFER(0|32) := VAR061;
    BUFFER(32|3) := VAR062A;
    BUFFER(35|3) := VAR063A;
    BUFFER(38|32) := VAR064;
    BUFFER(70|3) := VAR065A;
    BUFFER(73|3) := VAR066A;
    BUFFER(76|3) := VAR067A;
    BUFFER(79|1) := VAR068A;
    END;

PROCEDURE IMAGE5;
    BEGIN
    VAR069 := BUFFER(0|32);
    VAR070 := CONVERT (BUFFER(32|3));
    VAR070A := BUFFER(32|3);
    VAR071 := CONVERT (BUFFER(35|3));
    VAR071A := BUFFER(35|3);
    VAR072 := BUFFER(38|32);
    VAR073 := CONVERT (BUFFER(70|3));
    VAR073A := BUFFER(70|3);
    VAR074 := CONVERT (BUFFER(73|3));
    VAR074A := BUFFER(73|3);
    VAR075 := CONVERT (BUFFER(76|3));
    VAR075A := BUFFER(76|3);
    VAR076 := CONVERT (BUFFER(79|1));
    VAR076A := BUFFER(79|1);
    END;

PROCEDURE REIMAGE5;
    BEGIN
    BUFFER := " ";
    BUFFER(0|32) := VAR069;
    BUFFER(32|3) := VAR070A;
    BUFFER(35|3) := VAR071A;
    BUFFER(38|32) := VAR072;
    BUFFER(70|3) := VAR073A;
    BUFFER(73|3) := VAR074A;
    BUFFER(76|3) := VAR075A;
    BUFFER(79|1) := VAR076A;
    END;

PROCEDURE IMAGE6;
    BEGIN
```

```
PROCEDURE REDO2;
BEGIN
FOR X := 38 STEP -1 UNTIL 0 DO VAR010(X + 1|1) := VAR010(X|1);
VAR010(0|1) := " ";
FOR X := 0 UNTIL 37 DO IF ((VAR010(X|1) = " ") AND
    (VAR010(X + 1|1) ¬= " ") AND (VAR010(X + 2|1) = " ")) THEN
        BEGIN
        FOR Y := 38 STEP -1 UNTIL (X + 2) DO
            VAR010(Y + 1|1) := VAR010(Y|1);
        VAR010(X + 2|1) := ".";
        END;
FOR X := 0 UNTIL 38 DO IF ((VAR010(X|1) = " ") AND
    (VAR010(X + 1|1) ¬= " ")) THEN
        BEGIN
        FOR Y := 38 STEP -1 UNTIL (X + 1) DO
            VAR010(Y + 1|1) := VAR010(Y|1);
        VAR010(X|2) := " /";
        END;
FOR X := 0 UNTIL 38 DO VAR010(X|1) := VAR010(X + 1|1);
IF VAR011 = 1 THEN VAR013A := VAR014A := VAR015A := "9999";
IF VAR014A = "    " THEN VAR014A := "9999";
IF VAR015A = "    " THEN VAR015A := "9999";
IF VAR016 = "NONE " THEN VAR016 := "00000";
IF (VAR016 = "     ") OR (VAR016 = "NA   ") THEN VAR016 := "99999";
IF VAR017 = "NONE " THEN VAR017 := "00000";
IF (VAR017 = "     ") OR (VAR017 = "NA   ") THEN VAR017 := "99999";
IF VAR018A = " " THEN VAR018A := "9";
IF VAR018A = "3" THEN VAR018A := "1";
IF VAR018A = "6" THEN VAR018A := IF VAR017 = "99999" THEN "1" ELSE "4";
VAR019A := " ";
IF VAR021A = "  " THEN VAR021A := "99";
IF VAR022A = "  " THEN VAR022A := "99";
END;

PROCEDURE REDO3;
BEGIN
IF VAR025A = "   " THEN VAR025A := "999";
IF VAR026A = " " THEN VAR026A := "9";
IF VAR027A = "   " THEN VAR027A := "999";
IF VAR028A = " " THEN VAR028A := "9";
IF VAR029A = "   " THEN VAR029A := "999";
IF VAR030A = " " THEN VAR030A := "9";
IF VAR031A = "   " THEN VAR031A := "999";
IF VAR032A = " " THEN VAR032A := "9";
IF VAR033A = "   " THEN VAR033A := "999";
IF VAR034A = " " THEN VAR034A := "9";
IF VAR035A = "   " THEN VAR035A := "999";
```

```
IF VAR036A = " " THEN VAR036A := "9";
IF VAR037A = "   " THEN VAR037A := "999";
IF VAR038A = " " THEN VAR038A := "9";
IF VAR039A = "   " THEN VAR039A := "999";
IF VAR040A = " " THEN VAR040A := "9";
IF VAR041A = "   " THEN VAR041A := "999";
IF VAR042A = " " THEN VAR042A := "9";
IF VAR043A = "   " THEN VAR043A := "999";
IF VAR044A = " " THEN VAR044A := "9";
IF VAR045A = "   " THEN VAR045A := "999";
IF VAR046A = " " THEN VAR046A := "9";
IF VAR047A = "   " THEN VAR047A := "999";
IF VAR048A = " " THEN VAR048A := "9";
IF VAR049A = "   " THEN VAR049A := "999";
IF VAR050A = " " THEN VAR050A := "9";
IF VAR051A = "   " THEN VAR051A := "999";
IF VAR052A = " " THEN VAR052A := "9";
IF VAR053A = "   " THEN VAR053A := "999";
IF VAR054A = " " THEN VAR054A := "9";
IF VAR055A = "   " THEN VAR055A := "999";
IF VAR056A = " " THEN VAR056A := "9";
IF VAR057A = "   " THEN VAR057A := "999";
IF VAR058A = " " THEN VAR058A := "9";
END;

PROCEDURE REDO4;
BEGIN
VAR062A := VAR065A := "   ";
IF VAR063A = "   " THEN VAR063A := IF VAR061 = "        " THEN
   "000" ELSE "999";
IF VAR066A = "   " THEN VAR066A := IF VAR064 = "        " THEN
   "000" ELSE "999";
END;

PROCEDURE REDO5;
BEGIN
VAR070A := VAR073A := "   ";
IF VAR071A = "   " THEN VAR071A := IF VAR069 = "        " THEN
   "000" ELSE "999";
IF VAR074A = "   " THEN VAR074A := IF VAR072 = "        " THEN
   "000" ELSE "999";
END;

PROCEDURE REDO6;
BEGIN
VAR078A := "   ";
IF VAR079A = "   " THEN VAR079A := IF VAR077 = "        "THEN
   "000" ELSE "999";
```

```
IF VAR080A = "   " THEN VAR080A := "000";
END;

PROCEDURE RED07;
BEGIN
IF VAR084A = " " THEN VAR084A := "0";
END;

PROCEDURE INITIALIZE;
   BEGIN
   PEWIND11;
   REWIND12;
   READ11(BUFFER);
   QCASES := CONVERT(BUFFER(0|3));
   READ12(BUFFER);
   ACARDS := CONVERT(BUFFER(0|3));
   READ (TCARDS);
   TCASENO := ACASENO := 0;
   END;

INITIALIZE;
FOR I := 1 UNTIL QCASES DO
   BEGIN
   GETCASE;
   RED01;
   RED02;
   RED03;
   RED04;
   RED05;
   RED06;
   RED07;
   ADDTRAININFO;
   ADDOUTPUTCODES;
   PUNCHNEWCASE;
   END;
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//             DD DISP=SHR,DSN=SYS1.FORTLIB
//LINK.SYSPRINT DD DUMMY
//LINK.SYSIN   DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.FOALG3,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT07F001  DD SYSOUT=B
//GO.FT11F001  DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QCARDS,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT12F001  DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.ACARDS,
```

```
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.SYSIN     DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.TCARDS,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
```

APPENDIX F

SAMPLE E

INTELLA SOURCE DECK SPSS PROGRAM

```
//HUBER JOB (2600,0678,YS42),'HUBER,E.W.'
// EXEC SPSS,REGION=250K
//FT04F001 DD DSNAME=S2600.INTELLA,UNIT=2311,VOL=SER=SYS003,
// DISP=(NEW,KEEP),DCB=BLKSIZE=3624,LABEL=EXPDT=75100,
// SPACE=(CYL,(3,2),RLSE)
//SYSIN DD *
FILE NAME       INTELLA  YS42 TASK ANALYSIS GROUP, FIRST QUESTIONNAIRE
RUN NAME        YS-42 TASK ANALYSIS GROUP THESIS, FIRST QUESTIONNAIRE
VARIABLE LIST   VAR001 TO VAR086
# OF CASES      325
INPUT MEDIUM    CARD
INPUT FORMAT    FIXED (A25,F5.0,A37,F5.0,F1.0,A2,F1.0,F3.0,F1.0/
                A40,F1.0,F2.0,3F4.0,2A5,F1.0,F5.0,F1.0,2F2.0,F3.0,F1.0/
                17(F3.0,F1.0),8X,F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,2F3.0,35X,F3.0,F1.0/
                A75,F1.0,F3.0,F1.0)
MISSING VALUES  VAR005,VAR007,VAR009,VAR011,VAR018,VAR020,VAR024,VAR026,
                VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,VAR042,
                VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,VAR058,
                VAR060,VAR068,VAR076,VAR082,VAR084,VAR086 (9)/
                VAR012,VAR021,VAR022 (99)/
                VAR008,VAR023,VAR025,VAR027,VAR029,VAR031,VAR033,VAR035,
                VAR037,VAR039,VAR041,VAR043,VAR045,VAR047,VAR049,VAR051,
                VAR053,VAR055,VAR057,VAR059,VAR063,VAR066,VAR067,VAR071,
                VAR074,VAR075,VAR079,VAR080,VAR081,VAR085 (999)/
                VAR062,VAR065,VAR070,VAR073,VAR078 ('   ')/
                VAR013 TO VAR015 (9999)/
                VAR002,VAR004,VAR019 (99999)/
                VAR061,VAR064,VAR069,VAR072,VAR077
                ('                                          ')
VAR LABELS      VAR001,COMMAND NAME/
                VAR002,BILLET SEQUENCE CODE/
                VAR003,BILLET TITLE/
                VAR004,UNIT IDENTIFICATION CODE/
                VAR005,CONUS-OVERSEAS/
                VAR006,COUNTRY-STATE CODE/
                VAR007,CODER CODE/
                VAR008,CARD #1 SEQUENCE/
                VAR009,CARD ONE NUMBER/
                VAR010,RESPONDENTS NAME/
                VAR011,RESPONDENTS RANK/
                VAR012,RESPONDENTS AGE/
                VAR013,RESPONDENTS DESIGNATOR/
                VAR014,RESPONDENTS PREVIOUS DESIGNATOR/
                VAR015,RESPONDENTS FIRST DESIGNATOR/
                VAR016,BILLET SUBSPECIALTY CODE/
```

```
VAR017,RESPONDENTS SUBSPECIALTY CODE/
VAR018,EDUCATIONAL LEVEL/
VAR019,TRAINING USED IN THIS BILLET/
VAR020,FIRST INTELL BILLET, NO-YES/
VAR021,YEARS PREVIOUS INTELL EXPERIENCE/
VAR022,MONTHS IN THIS BILLET/
VAR023,CARD #2 SEQUENCE/
VAR024,CARD TWO NUMBER/
VAR025,% INTELL OFFICE ADMIN/
VAR026,VALID INTELL OFFICE ADMIN/
VAR027,% BRIEFS AND DEBRIEFS/
VAR028,VALID BRIEFS AND DEBRIEFS/
VAR029,% BUDGETS AND BUDGETING/
VAR030,VALID BUDGETS AND BUDGETING/
VAR031,% CHARTS AND AUDIO-VISUAL AIDS/
VAR032,VALID CHARTS AND AUDIO-VISUAL AIDS/
VAR033,% COUNTERINTELLIGENCE STUDIES/
VAR034,VALID COUNTERINTELLIGENCE STUDIES/
VAR035,% DATA ANALYSIS/
VAR036,VALID DATA ANALYSIS/
VAR037,% DECISIONS AND RECOMMENDATIONS/
VAR038,VALID DECISIONS AND RECOMMENDATIONS/
VAR039,% ESTIMATES/
VAR040,VALID ESTIMATES/
VAR041,% INTELL ANNEXES TO OPORDS/
VAR042,VALID INTELL ANNEXES TO OPORDS/
VAR043,% INTELL COLLECTION PLANS/
VAR044,VALID INTELL COLLECTION PLANS/
VAR045,% INTELL COLLECTION TASKING/
VAR046,VALID INTELL COLLECTION TASKING/
VAR047,% INTELLIGENCE REPORTS/
VAR048,VALID INTELLIGENCE REPORTS/
VAR049,% INTELLIGENCE STUDIES/
VAR050,VALID INTELLIGENCE STUDIES/
VAR051,% INTERFACE ADP-TELECOMMS/
VAR052,VALID INTERFACE ADP-TELECOMMS/
VAR053,% ORDERS OF BATTLE/
VAR054,VALID ORDERS OF BATTLE/
VAR055,% PHYSICAL SECURITY/
VAR056,VALID PHYSICAL SECURITY/
VAR057,% TACTICAL PLOTS/
VAR058,VALID TACTICAL PLOTS/
VAR059,CARD #3 SEQUENCE/
VAR060,CARD THREE NUMBER/
VAR061,FIRST INTELL OUTPUT ADDED/
VAR062,CODED FIRST ADDITIONAL OUTPUT/
VAR063,% FIRST INTELL OUTPUT ADDED/
VAR064,SECOND INTELL OUTPJT ADDED/
```

```
                VAR065,CODED SECOND ADDITIONAL OUTPUT/
                VAR066,% SECOND INTELL OUTPUT ADDED/
                VAR067,CARD #4 SEQUENCE/
                VAR068,CARD FOUR NUMBER/
                VAR069,THIRD INTELL OUTPUT ADDED/
                VAR070,CODED THIRD ADDITIONAL OUTPUT/
                VAR071,% THIRD INTELL OUTPUT ADDED/
                VAR072,FOURTH INTELL OUTPUT ADDED/
                VAR073,CODED FOURTH ADDITIONAL OUTPUT/
                VAR074,% FOURTH INTELL OUTPUT ADDED/
                VAR075,CARD #5 SEQUENCE/
                VAR076,CARD FIVE NUMBER/
                VAR077,FIFTH INTELL OUTPUT ADDED/
                VAR078,CODED FIFTH ADDITIONAL OUTPUT/
                VAR079,% FIFTH INTELL OUTPUT ADDED/
                VAR080,% NON-INTELLIGENCE OUTPUTS/
                VAR081,CARD #6 SEQUENCE/
                VAR082,CARD. SIX NUMBER/
                VAR083,RESPONDENTS COMMENTS/
                VAR084,ARE COMMENTS CONTINUED?/
                VAR085,CARD #7 SEQUENCE/
                VAR086,CARD SEVEN NUMBER
COMMENT         THE FOLLOWING UNIT IDENTIFICATION CODES LISTED FOR
                VAR004 ARE VALID UIC'S UNLESS THE NUMBER BEGINS WITH 999XX.
COMMENT         SEQUENCE NUMBERS, VARS 008, 023, 059, 067, 075, 081, AND 085,
                ARE KEYED IN THE FOLLOWING MANNER:
                LCDR MOUNT HAS 001 THROUGH 199
                LT FOSTER HAS 200 THROUGH 399
                LT BICKELL HAS 400 THROUGH 599
                LT HUBER HAS 600 THROUGH 799
                LT WATSON HAS 800 THROUGH 999
VALUE LABELS    VAR004 (03360) USS SARATOGA
                       (03362) USS INDEPENDENCE
                       (03363) USS KITTY HAWK
                       (03321) USS HANCOCK
                       (03334) USS ORISKANY
                       (03341) USS MIDWAY
                       (03342) USS F D ROOSEVELT
                       (03343) USS CORAL SEA
                       (03359) USS FORRESTAL
                       (03361) USS RANGER
                       (03364) USS CONSTELLATION
                       (03366) USS AMERICA
                       (03367) USS KENNEDY
                       (03365) USS ENTERPRISE
                       (05840) USS BLUE RIDGE
                       (20001) USS MOUNT WHITNEY
                       (62856) NAF LAJES
```

```
(60200) NAS CECIL FIELD
(00213) NAS KEY WEST
(57007) COMIDEASTFOR
(00309) NB GUANTANAMO
(62769) NB SUBIC
(64591) JSTPS
(99901) COMCARGRU ONE
(99902) COMCARGRU TWO
(99903) COMCARGRU THREE
(99904) COMCARGRU FOUR
(99905) COMCARGRU FIVE
(99906) COMCARGRU SIX
(99907) COMCARGRU SEVEN
(63126) MISSILE CENTER PT MUGU
(30883) NOSIC
(66967) FOSIC NORFOLK
(66842) FOSIC LONDON
(66600) FOSIF ROTA
(66970) FOSIF WESTPAC
(63013) NUWEPNTRAGRUPAC
(57012) COMNAVAIRLANT
(57025) COMNAVAIRPAC
(09550) COMFAIRMED
(09117) COMFAIRKEF
(99908) COMPATWING ONE
(63981) COMPATWINGSLANT
(05917) COMPATWINGSPAC
(57015) COMPHIBLANT
(57019) COMPHIBPAC
(55297) COMPHIBRON ONE
(55335) COMPHIBRON THREE
(55269) COMPHIBRON FIVE
(55281) COMPHIBRON SEVEN
(00510) COMNAVSOUTH-COM15
(99909) USSOUTHCOM
(99910) CINCEASTLANT
(00061) CINCUSNAVEUR
(57006) COMNAVFORJAPAN
(62894) COMNAVFORKOREA
(31585) CINC UNC-USF KOREA
(57014) COMICEDEFOR
(63842) COMANTDC
(62822) COMUSTDC
(62982) USMAC JUSMAG THAI
(08961) COMSECONDFLT
(57087) COMTHIRDFLT
(57042) COMSIXTHFLT
(57024) COMSEVENTHFLT
```

```
(99911) CINCAL
(00038) CINCPAC
(00070) CINCPACFLT
(00066) CINCLANT
(00060) CINCLANTFLT
(63420) NIPSSA
(63415) DIA
(99912) FICEUR
(63186) FICPAC
(99913) FICEURLANT
(68166) NISC
(65134) PACOMELINTCEN
(65792) LANTCOMELINTCEN
(66400) NIPSTRAFAC
(99914) CTF 168
(99915) CTG 168.1
(99916) CTG 168.2
(99917) CTG 168.3
(99918) FITCLANT
(99919) FITCPAC
(00015) COMNAVINTCOM
(62930) NFOIO
(63285) NISHQ
(63051) NISO CHASN
(65493) NISO EUROPE
(99920) NISO JAPAN
(99921) NISO MARIANAS
(63053) NISO NEW ORLEANS
(63054) NISO NEW YORK
(63055) NISO NORFOLK
(63064) NISO HAWAII
(63057) NISO SAN DIEGO
(63058) NISO SAN FRANCISCO
(99922) COMCRUDESGRU EIGHT
(99923) COMCRUDESGRU TWELVE
(31695) NAVCOSSACT
(99924) FASOTRAGRULANT BRUNS
(96013) CNA
(99925) COMFLTCORGRU TWO
(62919) COMCARIBSEAFRON
(62928) COMEASTSEAFRON
(99926) COMSUBGRU FIVE
(99927) COMSUBGRU SEVEN
(99928) COMSUBGRU EIGHT
(57016) COMSUBLANT
(57020) COMSUBPAC
(99929) COMAEWWINGPAC
(99930) COMRECONATKWING ONE
```

```
         (99931) VC ONE
         (09930) VQ ONE
         (09946) VQ TWO
         (09519) COMATWING ONE
         (99932) PHIBSCOL CORONADO
         (99933) IPAC
         (99934) NRRF KAMISEYA CTF72
         (99935) COMUSNAVPHIL-CTF 72
         (99936) CNO OP-96
         (99937) NFOIO FRIENDSHIP ANNEX
         (99938) DIA POMPONIO PLAZA
         (99939) DIA ANACOSTIA ANNEX
         (99940) DIA ARLINGTON HALL STATION
         (99941) DIA WASH NAVY YARD ANNEX
         (99942) DIA NSA ANNEX
         (99943) DIA ANMCC ANNEX
         (99944) DIA NEACP
         (99945) DIA CANADIAN DEF HQ
         (99946) DIA NATL MIL INTELL CENTER/
VAR005   (0) CONUS
         (1) EUROPE
         (2) PACIFIC
         (3) ATLANTIC-MED AFLOAT
         (4) PACIFIC AFLOAT/
VAR006   ('AF') AFLOAT COMMANDS
         ('AK') ALASKA
         ('AZ') AZORES
         ('CA') CALIFORNIA
         ('CN') NATIONALIST CHINA
         ('CZ') PANAMA CANAL ZONE
         ('DC') WASHINGTON DC
         ('FL') FLORIDA
         ('GM') GUAM
         ('GT') GUANTANAMO
         ('HI') HAWAII
         ('IC') ICELAND
         ('IT') ITALY
         ('JP') JAPAN
         ('KO') KOREA
         ('LA') LOUISIANA
         ('MA') MARIANAS
         ('MD') MARYLAND
         ('ME') MAINE
         ('NB') NEBRASKA
         ('NY') NEW YORK
         ('PA') PENNSYLVANIA
         ('PI') PHILIPPINE ISLANDS
         ('PR') PUERTO RICO
```

```
                ('SC') SOUTH CAROLINA
                ('SP') SPAIN
                ('TH') THAILAND
                ('UK') UNITED KINGDOM
                ('VA') VIRGINIA/
        VAR007  (1) LCDR MOUNT
                (2) LT FOSTER
                (3) LT BICKELL
                (4) LT HUBER
                (5) LT WATSON/
        VAR011  (1) CIVILIAN
                (3) LIEUTENANT
                (4) LCDR
                (5) CDR
                (6) CAPT/
        VAR018  (0) LESS THAN BACHELORS DEGREE
                (1) BACHELORS LEVEL
                (2) POSTGRADUATE STUDIES
                (4) MASTERS LEVEL
                (5) DOCTORAL LEVEL/
        VAR020  (0) NOT FIRST
                (1) FIRST/
        VAR026,VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,
        VAR042,VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,
        VAR058  (0) NOT VALID
                (1) VALID/
        VAR084  (0) NO COMMENTS
                (1) NO FURTHER COMMENTS
                (2) ADDITIONAL COMMENTS
PRINT FORMATS   VAR001,VAR003,VAR006,VAR010,VAR016,VAR017,VAR061,VAR062,
                VAR064,VAR065,VAR069,VAR070,VAR072,VAR073,VAR077,VAR078,
                VAR083 (A)
                VAR002,VAR004,VAR005,VAR007 TO VAR009,VAR011 TO VAR015,
                VAR018 TO VAR060,VAR062,VAR063,VAR065 TO VAR068,VAR070,
                VAR071,VAR073 TO VAR076,VAR078 TO VAR082,VAR084 TO VAR086 (0)
CONDESCRIPTIVE  VAR011, VAR012, VAR018, VAR020 TO VAR022, VAR025 TO VAR058,
                VAR063, VAR066, VAR071, VAR074, VAR079, VAR080
STATISTICS      ALL
READ INPUT DATA
SAVE FILE
FINISH
```

APPENDIX F

SAMPLE F

JCL DECK TO PRINT
COMPUTER PRODUCED DELPHI QUESTIONNAIRE

```
//HUBERTPS JOB (2600,0678,YS42),'HUBER,E.W.',TIME=90,TYPRUN=HOLD
//  EXEC PGM=TPS,PARM='TN'
//STEPLIB DD DSN=F0132.L,DISP=SHR,UNIT=2314,VOL=SER=LINDA
//SYSPRINT DD UNIT=1403,UCS=TN
//SYSIN DD UNIT=2321,VOL=SER=CEL003,DISP=(OLD,KEEP),
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=2000),DSNAME=S2600.TPSOUT
```

APPENDIX F

SAMPLE G

ALGOL SOURCE DECK TO PRODUCE 6 NOVEMBER 1974 DELPHI "A2" QUESTIONNAIRE

```
//HUBER3 JOB (2600,0578,YS42),'HUBER,E.W.',TIME=60
// EXEC ALGWCLG,PARM.GO='SIZE=220K',REGION=375K
//ALGOL.SYSIN DD *
%ALGOL SIZE=220K
BEGIN

STRING (25) VAR001;
STRING (37) VAR003;
STRING (2) VAR006;
STRING (5) VAR002A, VAR004A, VAR016, VAR017, VAR019;
STRING (40) VAR010;
STRING (32) VAR061, VAR064, VAR069, VAR072, VAR077;
STRING (75) VAR083;
STRING (1) VAR005A, VAR007A, VAR009A, VAR011A, VAR018A, VAR020A,
   VAR024A, VAR026A, VAR028A, VAR030A, VAR032A, VAR034A, VAR036A,
   VAR038A, VAR040A, VAR042A, VAR044A, VAR046A, VAR048A, VAR050A,
   VAR052A, VAR054A, VAR056A, VAR058A, VAR060A, VAR068A, VAR076A,
   VAR082A, VAR084A, VAR086A;
STRING (2) VAR012A, VAR021A, VAR022A;
STRING (3) VAR008A, VAR023A, VAR025A, VAR027A, VAR029A, VAR031A,
   VAR033A, VAR035A, VAR037A, VAR039A, VAR041A, VAR043A, VAR045A,
   VAR047A, VAR049A, VAR051A, VAR053A, VAR055A, VAR057A, VAR059A,
   VAR062, VAR063A, VAR065, VAR066A, VAR067A, VAR070, VAR071A,
   VAR073, VAR074A, VAR075A, VAR078, VAR079A, VAR080A, VAR081A,
   VAR085A;
STRING (4) VAR013A, VAR014A, VAR015A;
STRING (80) BUFFER;
INTEGER VAR002, VAR004, VAR005, VAR007, VAR008, VAR009,
   VAR011, VAR012, VAR013, VAR014, VAR015, VAR018, VAR020, VAR021,
   VAR022, VAR023, VAR024, VAR025, VAR026, VAR027, VAR028, VAR029,
   VAR030, VAR031, VAR032, VAR033, VAR034, VAR035, VAR036, VAR037,
   VAR038, VAR039, VAR040, VAR041, VAR042, VAR043, VAR044, VAR045,
   VAR046, VAR047, VAR048, VAR049, VAR050, VAR051, VAR052, VAR053,
   VAR054, VAR055, VAR056, VAR057, VAR058, VAR059, VAR060, VAR063,
   VAR066, VAR067, VAR068, VAR071, VAR074, VAR075, VAR076, VAR079,
   VAR080, VAR081, VAR082, VAR084, VAR085, VAR086, QCASES, TPSNO,
   ADDRESSUIC, ADDRESSCARDNO;
LOGICAL FLAGCASE, FLAGRANK, FLAGAGE, FLAGDESIG, FLAGBILLETSSCODE,
   FLAGRESPSSCODE, FLAGEDUC, FLAGFIRSTCODE, FLAGYEARS,
   FLAGMONTHS, FLAGBSC, ADDOUTPUT1, ADDOUTPUT2, ADDOUTPUT3,
   ADDOUTPUT4, ADDOUTPUT5;

PROCEDURE REWINDQCARDFILE; FORTRAN "RWND11";

PROCEDURE REWINDTPSFILE; FORTRAN "RWND12";

PROCEDURE REWINDADDRESSFILE; FORTRAN "RWND13";
```

```
PROCEDURE GETQCARD (STRING (80) RESULT BUF); FORTRAN "READ11";

PROCEDURE GETTPSCARD (STRING (80) RESULT BUF); FORTRAN "READ12";

PROCEDURE GETADDRESSCARD (STRING (80) RESULT BUF); FORTRAN "READ13";

PROCEDURE PUTTPSCARD (STRING (80) VALUE BUF);
   BEGIN
   PROCEDURE PUTIT (STRING (80) VALUE BUFX); FORTRAN "RITE14";
   BUF(0|10) := " ";
   PUTIT (BUF);
   END;

PROCEDURE PUTTOLABEL (STRING (80) VALUE BUF); FORTRAN "RITE15";

PROCEDURE PUTFROMLABEL (STRING (80) VALUE BUF); FORTRAN "RITE16";

PROCEDURE GETCASE;
   FOR T := 1 UNTIL 7 DO BEGIN
      GETQCARD (BUFFER);
      CASE T OF BEGIN
      IMAGE1;
      IMAGE2;
      IMAGE3;
      IMAGE4;
      IMAGE5;
      IMAGE6;
      IMAGE7 END;
   END;

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(U|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

PROCEDURE IMAGE1;
   BEGIN
   VAR001 := BUFFER(0|25);
   VAR002 := CONVERT (BUFFER(25|5));
   VAR002A := BUFFER(25|5);
   VAR003 := BUFFER(30|37);
   VAR004 := CONVERT (BUFFER(67|5));
```

```
    VAR004A := BUFFER(67|5);
    VAR005 := CONVERT (BUFFER(72|1));
    VAR005A := BUFFER(72|1);
    VAR006 := BUFFER (73|2);
    VAR007 := CONVERT (BUFFER(75|1));
    VAR007A := BUFFER(75|1);
    VAR008 := CONVERT (BUFFER(76|3));
    VAR008A := BUFFER(76|3);
    VAR009 := CONVERT (BUFFER(79|1));
    VAR009A := BUFFER(79|1);
    END;

PROCEDURE IMAGE2;
    BEGIN
    VAR010 := BUFFER(0|40);
    VAR011 := CONVERT (BUFFER(40|1));
    VAR011A := BUFFER(40|1);
    VAR012 := CONVERT (BUFFER(41|2));
    VAR012A := BUFFER(41|2);
    VAR013 := CONVERT (BUFFER(43|4));
    VAR013A := BUFFER(43|4);
    VAR014 := CONVERT (BUFFER(47|4));
    VAR014A := BUFFER(47|4);
    VAR015 := CONVERT (BUFFER(51|4));
    VAR015A := BUFFER(51|4);
    VAR016 := BUFFER(55|5);
    VAR017 := BUFFER(60|5);
    VAR018 := CONVERT (BUFFER(65|1));
    VAR018A := BUFFER(65|1);
    VAR019 := BUFFER(66|5);
    VAR020 := CONVERT (BUFFER(71|1));
    VAR020A := BUFFER(71|1);
    VAR021 := CONVERT (BUFFER(72|2));
    VAR021A := BUFFER(72|2);
    VAR022 := CONVERT (BUFFER(74|2));
    VAR022A := BUFFER(74|2);
    VAR023 := CONVERT (BUFFER(76|3));
    VAR023A := BUFFER(76|3);
    VAR024 := CONVERT (BUFFER(79|1));
    VAR024A := BUFFER(79|1);
    END;

PROCEDURE IMAGE3;
    BEGIN
    VAR025 := CONVERT (BUFFER(0|3));
    VAR025A := BUFFER(0|3);
    VAR026 := CONVERT (BUFFER(3|1));
    VAR026A := BUFFER(3|1);
```

```
VAR027 := CONVERT (BUFFER(4|3));
VAR027A := BUFFER(4|3);
VAR028 := CONVERT (BUFFER(7|1));
VAR028A := BUFFER(7|1);
VAR029 := CONVERT (BUFFER(8|3));
VAR029A := BUFFER(8|3);
VAR030 := CONVERT (BUFFER(11|1));
VAR030A := BUFFER(11|1);
VAR031 := CONVERT (BUFFER(12|3));
VAR031A := BUFFER(12|3);
VAR032 := CONVERT (BUFFER(15|1));
VAR032A := BUFFER(15|1);
VAR033 := CONVERT (BUFFER(16|3));
VAR033A := BUFFER(16|3);
VAR034 := CONVERT (BUFFER(19|1));
VAR034A := BUFFER(19|1);
VAR035 := CONVERT (BUFFER(20|3));
VAR035A := BUFFER(20|3);
VAR036 := CONVERT (BUFFER(23|1));
VAR036A := BUFFER(23|1);
VAR037 := CONVERT (BUFFER(24|3));
VAR037A := BUFFER(24|3);
VAR038 := CONVERT (BUFFER(27|1));
VAR038A := BUFFER(27|1);
VAR039 := CONVERT (BUFFER(28|3));
VAR039A := BUFFER(28|3);
VAR040 := CONVERT (BUFFER(31|1));
VAR040A := BUFFER(31|1);
VAR041 := CONVERT (BUFFER(32|3));
VAR041A := BUFFER(32|3);
VAR042 := CONVERT (BUFFER(35|1));
VAR042A := BUFFER(35|1);
VAR043 := CONVERT (BUFFER(36|3));
VAR043A := BUFFER(36|3);
VAR044 := CONVERT (BUFFER(39|1));
VAR044A := BUFFER(39|1);
VAR045 := CONVERT (BUFFER(40|3));
VAR045A := BUFFER(40|3);
VAR046 := CONVERT (BUFFER(43|1));
VAR046A := BUFFER(43|1);
VAR047 := CONVERT (BUFFER(44|3));
VAR047A := BUFFER(44|3);
VAR048 := CONVERT (BUFFER(47|1));
VAR048A := BUFFER(47|1);
VAR049 := CONVERT (BUFFER(48|3));
VAR049A := BUFFER(48|3);
VAR050 := CONVERT (BUFFER(51|1));
VAR050A := BUFFER(51|1);
```

```
    VAR051 := CONVERT (BUFFER(52|3));
    VAR051A := BUFFER(52|3);
    VAR052 := CONVERT (BUFFER(55|1));
    VAR052A := BUFFER(55|1);
    VAR053 := CONVERT (BUFFER(56|3));
    VAR053A := BUFFER(56|3);
    VAR054 := CONVERT (BUFFER(59|1));
    VAR054A := BUFFER(59|1);
    VAR055 := CONVERT (BUFFER(60|3));
    VAR055A := BUFFER(60|3);
    VAR056 := CONVERT (BUFFER(63|1));
    VAR056A := BUFFER(63|1);
    VAR057 := CONVERT (BUFFER(64|3));
    VAR057A := BUFFER(64|3);
    VAR058 := CONVERT (BUFFER(67|1));
    VAR058A := BUFFER(67|1);
    VAR059 := CONVERT (BUFFER(76|3));
    VAR059A := BUFFER(76|3);
    VAR060 := CONVERT (BUFFER(79|1));
    VAR060A := BUFFER(79|1);
    END;

PROCEDURE IMAGE4;
    BEGIN
    VAR061 := BUFFER(0|32);
    VAR062 := BUFFER(32|3);
    VAR063 := CONVERT (BUFFER(35|3));
    VAR063A := BUFFER(35|3);
    VAR064 := BUFFER(38|32);
    VAR065 := BUFFER(70|3);
    VAR066 := CONVERT (BUFFER(73|3));
    VAR066A := BUFFER(73|3);
    VAR067 := CONVERT (BUFFER(76|3));
    VAR067A := BUFFER(76|3);
    VAR068 := CONVERT (BUFFER(79|1));
    VAR068A := BUFFER(79|1);
    END;

PROCEDURE IMAGE5;
    BEGIN
    VAR069 := BUFFER(0|32);
    VAR070 := BUFFER(32|3);
    VAR071 := CONVERT (BUFFER(35|3));
    VAR071A := BUFFER(35|3);
    VAR072 := BUFFER(38|32);
    VAR073 := BUFFER(70|3);
    VAR074 := CONVERT (BUFFER(73|3));
    VAR074A := BUFFER(73|3);
```

```
      VAR075 := CONVERT (BUFFER(76|3));
      VAR075A := BUFFER(76|3);
      VAR076 := CONVERT (BUFFER(79|1));
      VAR076A := BUFFER(79|1);
      END;

   PROCEDURE IMAGE6;
      BEGIN
      VAR077 := BUFFER(0|32);
      VAR078 := BUFFER(32|3);
      VAR079 := CONVERT (BUFFER(35|3));
      VAR079A := BUFFER(35|3);
      VAR080 := CONVERT (BUFFER(38|3));
      VAR080A := BUFFER(38|3);
      VAR081 := CONVERT (BUFFER(76|3));
      VAR081A := BUFFER(76|3);
      VAR082 := CONVERT (BUFFER(79|1));
      VAR082A := BUFFER(79|1);
      END;

   PROCEDURE IMAGE7;
      BEGIN
      VAR083 := BUFFER(0|75);
      VAR084 := CONVERT (BUFFER(75|1));
      VAR084A := BUFFER(75|1);
      VAR085 := CONVERT (BUFFER(76|3));
      VAR085A := BUFFER(76|3);
      VAR086 := CONVERT (BUFFER(79|1));
      VAR086A := BUFFER(79|1);
      END;

   PROCEDURE BLOCK1;
      BEGIN
      BUFFER := " ";
      BUFFER(10|6) := "-AT072";
      BUFFER(16|3) := VAR008A;
      PUTTPSCARD(BUFFER);
      END;

   PROCEDURE BLOCK2;
      BEGIN
      PROCEDURE COMPRESS (STRING (80) VALUE RESULT BUF);
         IF BUF ¬= " " THEN BEGIN
         FOR X := 0 UNTIL 77 DO IF BUF(X|1) = "/" THEN
         FOR Y := X UNTIL 78 DO BUF(Y|1) := BUF(Y+1|1);
         WHILE (BUF(0|1) = " ") AND (BUF ¬= " ") DO
            BUF(0|70) := BUF(1|70);
         END;
```

```
STRING (80) ARRAY LABELLINE (1::12);
FOR X := 1 UNTIL 12 DO LABELLINE(X) := " ";
IF VAR004 <= ADDRESSUIC THEN RESTARTADDRESS;
WHILE VAR004 > ADDRESSUIC DO GETNEXTADDRESS;
IF VAR004 = ADDRESSUIC THEN WHILE VAR004 = ADDRESSUIC DO
   BEGIN
   BUFFER(0|10) := " ";
   WHILE (BUFFER(10|1) = " ") AND (BUFFER(10|60) ¬= " ") DO
      FOR X := 10 UNTIL 70 DO BUFFER(X|1) := BUFFER(X+1|1);
   IF (ADDRESSCARDNO >= 1) AND (ADDRESSCARDNO <= 5) THEN
      LABELLINE(ADDRESSCARDNO) := BUFFER(10|60);
   FOR X := 1 UNTIL 3 DO FOR Y := 70 STEP -1 UNTIL 10 DO
      BUFFER(Y+1|1) := BUFFER(Y|1);
   BUFFER(10|3) := "-DB";
   PUTTPSCARD(BUFFER);
   GETADDRESSCARD(BUFFER);
   ADDRESSUIC := CONVERT(BUFFER(0|5));
   ADDRESSCARDNO := CONVERT(BUFFER(5|1));
   END;
BUFFER := " ";
BUFFER(10|12) := "-SP001/ATTN:";
PUTTPSCARD(BUFFER);
BUFFER := " ";
BUFFER(10|8) := IF ¬((VAR011 >= 1) AND (VAR011 <= 6)) THEN " "
   ELSE CASE VAR011 OF
   ("/MR.", " ", "/L/T", "/L/C/D/R", "/C/D/R", "/C/A/P/T");
PUTTPSCARD(BUFFER);
BUFFER := " ";
BUFFER(10|40) := VAR010;
FOR X := 10 UNTIL 40 DO IF BUFFER(X|1) = "#" THEN
   BUFFER(X|1) := " ";
BUFFER(55|6) := "-SP003";
PUTTPSCARD(BUFFER);
FOR X := 5 STEP -1 UNTIL 1 DO LABELLINE(X+1) := LABELLINE(X);
LABELLINE(1) := " ";
LABELLINE(1)(25|3) := VAR008A;
FOR X := 2 UNTIL 6 DO COMPRESS(LABELLINE(X));
COMMENT THIS WRITES THE SMALL "FROM LABEL";
FOR X := 1 UNTIL 8 DO PUTFROMLABEL(LABELLINE(X)(0|34));
LABELLINE(9) := "ATTN:";
LABELLINE(10) := VAR010;
COMPRESS(LABELLINE(10));
FOR X := 0 UNTIL 60 DO IF LABELLINE(10)(X|1) = "#" THEN
   LABELLINE(10)(X|1) := " ";
COMPRESS(LABELLINE(10));
FOR X := 45 STEP -1 UNTIL 0 DO
   LABELLINE(10)(X+5|1) := LABELLINE(10)(X|1);
LABELLINE(10)(0|5) := " ";
```

```
    LABELLINE(10)(0|4) := IF ¬((VAR011 >= 1) AND (VAR011 <= 6))
       THEN " " ELSE CASE VAR011 OF
       (" MR.", " ", "  LT", "LCDR", " CDR", "CAPT");
    COMPRESS(LABELLINE(10));
    FOR X := 1 UNTIL 12 DO FOR Y := 60 STEP -1 UNTIL 0 DO
       LABELLINE(X)(Y+2|1) := LABELLINE(X)(Y|1);
    FOR X := 1 UNTIL 12 DO LABELLINE(X)(0|2) := " ";
    COMMENT THIS WRITES THE LARGE "TO LABEL";
    FOR X := 1 UNTIL 12 DO PUTTOLABEL(LABELLINE(X)(0|40));
    FOR X := 1 UNTIL 12 DO LABELLINE(X) := " ";
    LABELLINE(1)(25|3) := VAR008A;
    LABELLINE(2)(2|30) := "SUPERINTENDENT";
    LABELLINE(3)(2|30) := "NAVAL POSTGRADUATE SCHOOL";
    LABELLINE(4)(2|30) := "(ATTN:  CODE 382/T.A.GROUP)";
    LABELLINE(5)(2|30) := "MONTEREY, CALIFORNIA 93940";
    COMMENT THIS WRITES THE SMALL "FROM LABEL";
    FOR X := 1 UNTIL 8 DO PUTFROMLABEL(LABELLINE(X)(0|34));
    COMMENT THIS WRITES THE LARGE "TO LABEL";
    FOR X := 9, 1, 2, 9, 3, 9, 4, 9, 5, 9, 9, 9 DO
       PUTTOLABEL(LABELLINE(X)(0|40));
    END;

PROCEDURE BLOCK3;
    BEGIN
    INTEGER CTR;
    STRING (85) DUMMYNAME;
    LOGICAL TWOWORDNAME;
    TWOWORDNAME := FALSE;
    BUFFER := " ";
    IF ¬(((VAR011 >= 3) AND (VAR011 <= 6)) OR (VAR011 = 1)) THEN
       BUFFER(10|30) := " " ELSE CASE VAR011 OF
       BEGIN
       BUFFER(10|30) := "-LJ/MR.";
       ;
       BUFFER(10|30) := "-LJ/LIEUTENANT";
       BUFFER(10|30) := "-LJ/LIEUTENANT /COMMANDER";
       BUFFER(10|30) := "-LJ/COMMANDER";
       BUFFER(10|30) := "-LJ/CAPTAIN"
       END;
    PUTTPSCARD(BUFFER);
    DUMMYNAME := VAR010;
    FOR X := 0 UNTIL 38 DO IF (DUMMYNAME(X|6) = "/JR.  ")
       OR (DUMMYNAME(X|6) = "/I/I  ")
       OR (DUMMYNAME(X|6) = "/I/I/I")
       THEN DUMMYNAME(X|6) := " ";
    FOR X := 0 UNTIL 40 DO IF DUMMYNAME(X|1) = "," THEN
       DUMMYNAME(X|1) := " ";
    CTR := 40;
```

```
    WHILE DUMMYNAME(CTR|1) = " " DO CTR := CTR -1;
    DUMMYNAME(CTR + 1|1) := ":";
    FOR X := 0 UNTIL 40 DO IF DUMMYNAME(X|1) = "#" THEN BEGIN
       CTR := X; TWOWORDNAME := TRUE; END;
    IF ¬TWOWORDNAME THEN WHILE (DUMMYNAME(CTR|1) ¬= " ") AND
       (CTR > 0) DO CTR := CTR -1;
    IF CTR = 0 THEN WRITE (VAR008, "CTR = 0");
    BUFFER := " ";
    BUFFER(10|40) := DUMMYNAME(CTR + 1|40);
    PUTTPSCARD(BUFFER);
    END;

PROCEDURE BLOCK4;
    BEGIN
    PROCEDURE PRINTITEM (STRING (65) VALUE BUF);
       BEGIN
       PUTTPSCARD(BUFFER);
       BUFFER := " ";
       BUFFER(10|65) := BUF;
       END;
    BUFFER := " ";
    BUFFER(10|30) := IF FLAGCASE THEN "PROVIDE: " ELSE
       "MAKE CORRECTIONS AS NECESSARY.";
    IF FLAGBSC THEN PRINTITEM ("BILLET SEQUENCE CODE,");
    IF FLAGRANK THEN PRINTITEM ("RANK,");
    IF FLAGAGE THEN PRINTITEM ("AGE,");
    IF FLAGDESIG THEN PRINTITEM ("DESIGNATOR,");
    IF FLAGBILLETSSCODE THEN PRINTITEM ("BILLET SUBSPECIALTY CODE,");
    IF FLAGRESPSSCODE THEN PRINTITEM ("YOUR SUBSPECIALTY CODE,");
    IF FLAGEDUC THEN PRINTITEM ("HIGHEST EDUCATIONAL LEVEL,");
    IF FLAGFIRSTCODE THEN PRINTITEM
       ("ANSWER TO QUESTION REGARDING FIRST INTELLIGENCE TOUR STATUS,");
    IF FLAGYEARS THEN PRINTITEM
       ("YEARS PREVIOUS INTELLIGENCE EXPERIENCE,");
    IF FLAGMONTHS THEN PRINTITEM
       ("NUMBER OF MONTHS SERVED IN PRESENT BILLET,");
    FOR X := 10 UNTIL 79 DO IF BUFFER(X|1) = "," THEN
       BUFFER(X|1) := ".";
    PUTTPSCARD(BUFFER);
    IF ¬((VAR019(0|1) = "3") OR (VAR019(1|1) = "3") OR
       (VAR019(2|1) = "3") OR (VAR019(3|1) = "3") OR
       (VAR019(4|1) = "3")) THEN BEGIN
       BUFFER := " ";
       BUFFER(10|40) := "/WE WOULD ALSO LIKE FOR YOU TO INDICATE";
       PUTTPSCARD(BUFFER);
       BUFFER := " ";
       BUFFER(10|30) := "IF YOU ARE A /N/I/S///D/I/S";
       PUTTPSCARD(BUFFER);
```

```
        BUFFER := " ";
        BUFFER(10|36) := "GRADUATE: /Y/E/S____, /N/O____?";
        PUTTPSCARD(BUFFER);
        END;
    END;

PROCEDURE BLOCK5;
    BEGIN
    PROCEDURE PUTLINE (STRING (60) VALUE BUF);
        BEGIN
        BUFFER := " ";
        BUFFER(10|60) := BUF;
        PUTTPSCARD(BUFFER);
        END;
    PROCEDURE ENDLINE; PUTLINE ("-DB");
    PUTLINE ("-DBCOMMAND NAME/:");
    PUTLINE (VAR001);
    ENDLINE;
    PUTLINE ("BILLET SEQUENCE CODE-LC:");
    PUTLINE (IF (VAR002 = 0) OR (VAR002 = 99999) THEN "?"
        ELSE VAR002A);
    PUTLINE ("-UC");
    ENDLINE;
    PUTLINE ("BILLET TITLE/:");
    PUTLINE (VAR003);
    ENDLINE;
    PUTLINE ("RESPONDENT/'S RANK/:");
    PUTLINE (IF VAR011 = 1 THEN "CIVILIAN" ELSE IF VAR011 = 3 THEN
        "LIEUTENANT" ELSE IF VAR011 = 4 THEN "LIEUTENANT COMMANDER"
        ELSE IF VAR011 = 5 THEN "COMMANDER" ELSE "CAPTAIN");
    ENDLINE;
    PUTLINE ("RESPONDENT/'S AGE-LC:");
    PUTLINE (IF VAR012 = 99 THEN "?" ELSE VAR012A);
    PUTLINE ("-UC");
    ENDLINE;
    IF VAR011 ¬= 1 THEN BEGIN
        PUTLINE ("RESPONDENT/'S DESIGNATOR HISTORY-LC:");
        PUTLINE (IF (VAR013 = 0) OR (VAR013 = 9999) THEN "?" ELSE
            VAR013A);
        IF ¬((VAR014 = 0000) OR (VAR014 = 9999)) THEN
            PUTLINE (VAR014A);
        IF ¬((VAR015 = 0000) OR (VAR015 = 9999)) THEN
            PUTLINE (VAR015A);
        PUTLINE ("-UC");
        ENDLINE;
        PUTLINE ("BILLET SUBSPECIALTY CODE/:");
        PUTLINE (IF (VAR016 = "00000") THEN "NONE" ELSE IF
            (VAR016 = "99999") THEN "/?" ELSE VAR016);
```

```
        ENDLINE;
        PUTLINE ("RESPONDENT/'S SUBSPECIALTY CODE/:");
        PUTLINE (IF (VAR017 = "00000") THEN "NONE" ELSE IF
           (VAR017 = "99999") THEN "/?" ELSE VAR017);
        ENDLINE;
        END;
     PUTLINE ("EDUCATIONAL LEVEL/:");
     PUTLINE (IF VAR018 = 0 THEN "LESS THAN BACHELORS DEGREE" ELSE
        IF VAR018 = 1 THEN "BACHELORS LEVEL" ELSE IF VAR018 = 2 THEN
        "POSTGRADUATE STUDIES" ELSE IF VAR018 = 4 THEN
        "MASTERS LEVEL DEGREE" ELSE IF VAR018 = 5 THEN
        "DOCTORAL LEVEL" ELSE "NONE LISTED");
     ENDLINE;
     PUTLINE ("TRAINING USED IN THIS BILLET/:");
     IF VAR019 = " " THEN PUTLINE ("NONE LISTED") ELSE
        FOR X := 0 UNTIL 4 DO IF VAR019(X|1) ¬= " " THEN
        BEGIN
        ENDLINE;
        IF ((CONVERT(VAR019(X|1)) < 1) OR
           (CONVERT(VAR019(X|1)) > 9)) THEN WRITE (VAR008, "VAR019")
           ELSE BEGIN
        CASE (CONVERT(VAR019(X|1))) OF BEGIN

           BEGIN
           PUTLINE ("-AT026PREV INTELL EXPERIENCE");
           ENDLINE;
           END;

           BEGIN
           PUTLINE ("-AT026PREV MILITARY EXPERIENCE");
           ENDLINE;
           END;

           BEGIN
           PUTLINE ("-AT026DEFENSE INTELL SCHOOL");
           ENDLINE;
           END;

           BEGIN
           PUTLINE ("-AT026PHOTO INTERPRETATION");
           ENDLINE;
           END;

           BEGIN
           PUTLINE ("-AT026INTELL COURSES E/.G/. FITC/S//LOWRY");
           ENDLINE;
           END;
```

```
        BEGIN
        PUTLINE ("-AT026FOREIGN LANGUAGE");
        ENDLINE;
        END;

        BEGIN
        PUTLINE ("-AT026ADP EXPERIENCE");
        ENDLINE;
        END;

        BEGIN
        PUTLINE ("-AT026WAR AND STAFF COLLEGE/, ETC/.");
        ENDLINE;
        END;

        BEGIN
        PUTLINE ("-AT026OTHER TRAINING E/.G/. FAAWTC/S//DESSCHOOL");
        ENDLINE;
        END;
        END;
      END
      END;
    ENDLINE;
    PUTLINE ("FIRST INTELLIGENCE BILLET/?");
    PUTLINE (IF VAR020 = 0 THEN "NO" ELSE "YES");
    ENDLINE;
    PUTLINE ("YEARS PREVIOUS INTELLIGENCE EXPERIENCE-LC:");
    PUTLINE (IF VAR021 = 99 THEN "?" ELSE VAR021A);
    PUTLINE ("-UC");
    ENDLINE;
    PUTLINE ("MONTHS IN THIS BILLET-LC:");
    PUTLINE (IF VAR022 = 99 THEN "?" ELSE VAR022A);
    ENDLINE;
    END;

  PROCEDURE BLOCK23;
    BEGIN
    PROCEDURE ADDOUTPUTLINE (STRING (32) VALUE BUFX; STRING (3) VALUE
      BUFY);
      BEGIN
      BUFFER := " ";
      BUFFER(10|3) := "-UC";
      BUFFER(13|32) := BUFX;
      BUFFER(46|9) := "-LC-AT069";
      BUFFER(55|3) := IF BUFY = "999" THEN " " ELSE BUFY;
      BUFFER(58|4) := IF BUFY = "999" THEN "-DB" ELSE "%-DB";
      PUTTPSCARD(BUFFER);
      END;
```

```
    IF ADDOUTPUT1 THEN
       BEGIN
       BUFFER := " ";
       BUFFER(10|41) := "-LJ**-UCINTELLIGENCE OUTPUTS ADDED-LC:-DB";
       PUTTPSCARD(BUFFER);
       ADDOUTPUTLINE (VAR061, VAR063A);
       END;
    IF ADDOUTPUT2 THEN ADDOUTPUTLINE (VAR064, VAR066A);
    IF ADDOUTPUT3 THEN ADDOUTPUTLINE (VAR069, VAR071A);
    IF ADDOUTPUT4 THEN ADDOUTPUTLINE (VAR072, VAR074A);
    IF ADDOUTPUT5 THEN ADDOUTPUTLINE (VAR077, VAR079A);
    END;

PROCEDURE BLOCK24; IF ¬ADDOUTPUT1 THEN WHILE BUFFER(7|3) ¬= "28*" DO
    GETTPSCARD(BUFFER);

PROCEDURE BLOCK25;
    BEGIN
    BUFFER := " ";
    BUFFER(10|6) := "OUTPUT";
    IF ADDOUTPUT1 AND ADDOUTPUT2 THEN BUFFER(16|1) := "S";
    PUTTPSCARD(BUFFER);
    END;

PROCEDURE BLOCK26;
    BEGIN
    BUFFER := " ";
    BUFFER(10|4) := IF ADDOUTPUT1 AND ADDOUTPUT2 THEN "THEM" ELSE "IT";
    PUTTPSCARD(BUFFER);
    END;

PROCEDURE BLOCK27;
    BEGIN
    BUFFER := " ";
    BUFFER(10|3) := "-UC";
    BUFFER(13|32) := VAR061;
    BUFFER(47|3) := "-LC";
    PUTTPSCARD(BUFFER);
    END;

PROCEDURE BLOCK28;
    BEGIN
    PROCEDURE CHGTOPERIOD; FOR X := 0 UNTIL 79 DO IF BUFFER(X|1) = ","
       THEN BUFFER(X|1) := ".";
    STRING (65) PROCEDURE BREAKDOWN (STRING (1) VALUE OUTPUTCODE);
       BEGIN
       IF OUTPUTCODE = "A" THEN
          "ADMINISTRATION OF INTELLIGENCE OFFICE,"
```

```
        ELSE IF OUTPUTCODE = "B" THEN
           "RESOURCE//ORGANIZATIONAL MANAGEMENT,"
        ELSE IF OUTPUTCODE = "C" THEN
           "BUDGETING AND FISCAL PLANNING,"
        ELSE IF OUTPUTCODE = "D" THEN
           "DECISIONS AND RECOMMENDATIONS,"
        ELSE IF OUTPUTCODE = "E" THEN
           "BRIEFS AND DEBRIEFS,"
        ELSE IF OUTPUTCODE = "F" THEN
           "LIAISON,"
        ELSE IF OUTPUTCODE = "G" THEN
           "CHARTS AND AUDIO---VISUAL AIDS,"
        ELSE IF OUTPUTCODE = "H" THEN
           "COUNTERINTELLIGENCE STUDIES,"
        ELSE IF OUTPUTCODE = "I" THEN
           "DATA ANALYSIS,"
        ELSE IF OUTPUTCODE = "J" THEN
           "ESTIMATES,"
        ELSE IF OUTPUTCODE = "K" THEN
           "INTELLIGENCE ANNEXES TO /O/P/O/R/DS,"
        ELSE IF OUTPUTCODE = "L" THEN
           "INTELLIGENCE COLLECTION PLANS,"
        ELSE IF OUTPUTCODE = "M" THEN
           "INTELLIGENCE COLLECTION TASKING,"
        ELSE IF OUTPUTCODE = "N" THEN
           "/INTELLIGENCE /INFORMATION /REPORTS,"
        ELSE IF OUTPUTCODE = "O" THEN
           "INTERFACE WITH /A/D/P//TELECOMMUNICATIONS,"
        ELSE IF OUTPUTCODE = "P" THEN
           "ORDERS OF BATTLE,"
        ELSE IF OUTPUTCODE = "Q" THEN
           "PHYSICAL SECURITY,"
        ELSE IF OUTPUTCODE = "R" THEN
           "TACTICAL PLOTS,"
        ELSE IF OUTPUTCODE = "S" THEN
           "NON---INTELLIGENCE RELATED OUTPUTS,"
        ELSE IF OUTPUTCODE = "T" THEN
           "COUNSELING//TRAINING,"
        ELSE
"ONE OR MORE OF THE REVISED OUTPUTS LISTED IN -UCTABLE III-LC."
    END;

    BUFFER := " ";
    BUFFER(10|65) := BREAKDOWN(VAR062(0|1));
IF VAR062(1|2) = " " THEN
 BEGIN
 CHGTOPERIOD;
 PUTTPSCARD(BUFFER)
```

```
END
ELSE
BEGIN
   IF VAR062(1|1) = " " THEN BEGIN
      CHGTOPERIOD;
      PUTTPSCARD(BUFFER);
      END
      ELSE
      BEGIN
      PUTTPSCARD(BUFFER);
      BUFFER := " ";
      BUFFER(15|65) := BREAKDOWN(VAR062(1|1));
      END;
   IF (VAR062(2|1) = " ") AND (VAR062(1|1) ¬= " ") THEN
      BEGIN
      CHGTOPERIOD;
      BUFFER(10|3) := "AND";
      PUTTPSCARD(BUFFER);
      END
      ELSE
      BEGIN
      PUTTPSCARD(BUFFER);
      BUFFER := " ";
      BUFFER(10|3) := "AND";
      BUFFER(14|65) := BREAKDOWN(VAR062(2|1));
      CHGTOPERIOD;
      PUTTPSCARD(BUFFER);
      END
   END;
END;

PROCEDURE GETNEXTADDRESS;
   BEGIN
   ADDRESSCARDNO := 0;
   WHILE ADDRESSCARDNO ¬= 1 DO
      BEGIN
      GETADDRESSCARD(BUFFER);
      ADDRESSUIC := CONVERT(BUFFER(0|5));
      ADDRESSCARDNO := CONVERT(BUFFER(5|1));
      END;
   END;

PROCEDURE PRINTTABLEVALUE (STRING (3) VALUE BUF);
   BEGIN
   BUFFER := " ";
   BUFFER(10|3) := BUF;
   BUFFER(13|1) := "%";
   IF BUF = "000" THEN BUFFER(10|3) := "---";
```

```
    IF BUF = "999" THEN BUFFER(10|4) := "NONE";
    PUTTPSCARD(BUFFER);
    END;

PROCEDURE SETFLAGS;
    BEGIN
    FLAGCASE := FLAGBSC := FLAGRANK := FLAGAGE := FLAGDESIG :=
       FLAGBILLETSSCODE := FLAGRESPSSCODE := FLAGEDUC :=
       FLAGFIRSTCODE := FLAGYEARS := FLAGMONTHS := ADDOUTPUT1 :=
       ADDOUTPUT2 := ADDOUTPUT3 := ADDOUTPUT4 := ADDOUTPUT5 := FALSE;
    IF VAR002 = 99999 THEN FLAGCASE := FLAGBSC := TRUE;
    IF VAR011 = 9 THEN FLAGCASE := FLAGRANK := TRUE;
    IF VAR012 = 99 THEN FLAGCASE := FLAGAGE := TRUE;
    IF (VAR011 ¬= 1) AND (VAR013 = 9999) THEN FLAGCASE :=
       FLAGDESIG := TRUE;
    IF (VAR011 ¬= 1) AND (VAR016 = "99999") THEN FLAGCASE :=
       FLAGBILLETSSCODE := TRUE;
    IF (VAR011 ¬= 1) AND (VAR017 = "99999") THEN FLAGCASE :=
       FLAGRESPSSCODE := TRUE;
    IF VAR018 = 9 THEN FLAGCASE := FLAGEDUC := TRUE;
    IF VAR020 = 9 THEN FLAGCASE := FLAGFIRSTCODE := TRUE;
    IF VAR021 = 99 THEN FLAGCASE := FLAGYEARS := TRUE;
    IF VAR022 = 99 THEN FLAGCASE := FLAGMONTHS := TRUE;
    IF VAR061 ¬= " " THEN ADDOUTPUT1 := TRUE;
    IF VAR064 ¬= " " THEN ADDOUTPUT2 := TRUE;
    IF VAR069 ¬= " " THEN ADDOUTPUT3 := TRUE;
    IF VAR072 ¬= " " THEN ADDOUTPUT4 := TRUE;
    IF VAR077 ¬= " " THEN ADDOUTPUT5 := TRUE;
    END;

PROCEDURE TPS;
    BEGIN
    GETTPSCARD(BUFFER);
    TPSNO := CONVERT(BUFFER(6|3));
    WHILE (BUFFER(9|1) ¬= "*") AND (TPSNO ¬= 999) DO
       BEGIN
       BUFFER(0|10) := " ";
       PUTTPSCARD(BUFFER);
       GETTPSCARD(BUFFER);
       TPSNO := CONVERT(BUFFER(6|3));
       END;
    END;

PROCEDURE RESTARTTPS;
    BEGIN
    TPSNO := 0;
    REWINDTPSFILE;
    BUFFER := " ";
```

```
      BUFFER(10|3) := "-**";
      PUTTPSCARD(BUFFER);
      END;

   PROCEDURE RESTARTADDRESS;
      BEGIN
      ADDRESSUIC := ADDRESSCARDNO := 0;
      REWINDADDRESSFILE;
      END;

   PROCEDURE XADDRESSLABELS;
      BEGIN
      FOR X := 1 UNTIL 25 DO
      BEGIN
      FOR Y := 1 UNTIL 10 DO PUTTOLABEL
         ("XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX");
      FOR Y := 1, 2 DO PUTTOLABEL (" ");
      END;
      FOR X := 1 UNTIL 25 DO
      BEGIN
      FOR Y := 1 UNTIL 7 DO PUTFROMLABEL
         ("XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX");
      PUTFROMLABEL (" ");
      END;
      END;

   PROCEDURE CLOSEFILES;
      BEGIN
      XADDRESSLABELS;
      BUFFER := " ";
      BUFFER(10|3) := "-PG";
      PUTTPSCARD(BUFFER);
      BUFFER := " ";
      FOR X := 1 UNTIL 90 DO PUTTPSCARD(BUFFER);
      END;

   WRITE ("START RUN");
   RESTARTADDRESS;
   REWINDQCARDFILE;
   GETQCARD(BUFFER);
   QCASES := CONVERT(BUFFER(0|3));
   XADDRESSLABELS;
   FOR I := 1 UNTIL QCASES DO
      BEGIN
      GETCASE;
      WRITE (VAR008A);
      RESTARTTPS;
      SETFLAGS;
```

```
WHILE TPSNO ¬= 999 DO
   BEGIN
   TPS;
   IF TPSNO ¬= 999 THEN CASE TPSNO OF
      BEGIN
      BLOCK1;
      BLOCK2;
      BLOCK3;
      BLOCK4;
      BLOCK5;
      PRINTTABLEVALUE (VAR025A);
      PRINTTABLEVALUE (VAR027A);
      PRINTTABLEVALUE (VAR029A);
      PRINTTABLEVALUE (VAR031A);
      PRINTTABLEVALUE (VAR033A);
      PRINTTABLEVALUE (VAR035A);
      PRINTTABLEVALUE (VAR037A);
      PRINTTABLEVALUE (VAR039A);
      PRINTTABLEVALUE (VAR041A);
      PRINTTABLEVALUE (VAR043A);
      PRINTTABLEVALUE (VAR045A);
      PRINTTABLEVALUE (VAR047A);
      PRINTTABLEVALUE (VAR049A);
      PRINTTABLEVALUE (VAR051A);
      PRINTTABLEVALUE (VAR053A);
      PRINTTABLEVALUE (VAR055A);
      PRINTTABLEVALUE (VAR057A);
      BLOCK23;
      BLOCK24;
      BLOCK25;
      BLOCK26;
      BLOCK27;
      BLOCK28;
      END;
   END;
  END;
WRITE ("END RUN");
CLOSEFILES;
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//             DD DISP=SHR,DSN=SYS1.FORTLIB
//LINK.SYSPRINT DD DUMMY
//LINK.SYSIN   DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.FOALG3,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT11F001  DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),LABEL=(,,,IN),
```

```
//       DSNAME=S2600.QCARDS
//GO.FT12F001  DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),LABEL=(,,,IN),
//       DSNAME=S2600.DEL1TPS
//GO.FT13F001  DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),LABEL=(,,,IN),
//       DSNAME=S2600.MAILER
//GO.FT14F001  DD UNIT=2321,VOL=SER=CEL003,DISP=(NEW,KEEP),
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=2000),DSNAME=S2600.TPSOUT,
//       SPACE=(CYL,(250,10)),LABEL=RETPD=30
//GO.FT15F001  DD UNIT=2311,VOL=SER=SYS003,DISP=(NEW,KEEP),
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),DSNAME=S2600.BIGLBLS,
//       SPACE=(CYL,(5,2)),LABEL=RETPD=30
//GO.FT16F001  DD UNIT=2311,VOL=SER=SYS003,DISP=(NEW,KEEP),
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),DSNAME=S2600.LTLLBLS,
//       SPACE=(CYL,(5,2)),LABEL=RETPD=30
//GO.SYSIN DD *
```

APPENDIX F

SAMPLE H

PRINT OF 6 NOVEMBER 1974 DELPHI "A2"
SOURCE DECK FOR COMPUTER-PRODUCED QUESTIONNAIRE

```
   -RS -TR- -CCO -CN -UC -BF -DB -IS024
   NAVAL POSTGRADUATE SCHOOL -DB
   MONTEREY/, CALIFORNIA /9/3/9/4/0 -NF -CC1 -DB
   -SP002
   -LC-LJ-DB-AT060/N/C4(382)///T/A/G-AT071
1*
   -DB
   -AT0601211
   -DB
   -AT0606 /N/D/V 1974-SP004
   -CC1
2*
   -SP001
   -LJ/DEAR
3*
   -PP-EM/THIS IS THE SECOND PHASE OF THE NAVAL INTELLIGENCE
   COMMUNITY TASK ANALYSIS BEING CONDUCTED AT THE /NAVAL
   /POSTGRADUATE /SCHOOL.  /WE APPRECIATE YOUR RESPONSE TO
   OUR FIRST QUESTIONNAIRE.  /WE WOULD NOW LIKE TO
   PROVIDE YOU WITH  A LITTLE FEEDBACK. -PP
   /THE INSTRUMENT WE ARE USING THIS TIME IS CONSTRUCTED
   AS A PART OF A "/DELPHI" TECHNIQUE.  /IN LIGHT OF THE OVERALL
   COMMUNITY'S
   ANSWERS
   TO OUR FIRST QUESTIONNAIRE, WE WILL ASK YOU TO RE---EVALUATE YOUR
   ORIGINAL RESPONSES (WHICH HAVE BEEN LISTED
   FOR YOU IN -UCTABLE II-LC).
   /WHILE NOT ATTEMPTING TO MOVE THE VARIOUS TIME ALLOCATIONS
   TOWARD A CONSENSUS, THE /DELPHI WILL HELP US ARRIVE
   AT A CONSENSUS OF THE ENTIRE COMMUNITY'S OUTPUTS AND
   SHOULD HELP VALIDATE OUR DATA BASE.
   -PP
   /THE NEXT PHASE WILL APPLY OUR /WASHINGTON, /NORFOLK, AND /PEARL
   INTERVIEW
   DATA TO THE QUESTION OF EDUCATIONAL REQUIREMENTS IN
   THE COMMUNITY.
   /FIRST, HOWEVER,
   WE NEED YOUR HELP IN THIS PHASE.   /INCIDENTALLY, IF YOU
   ARE NO LONGER INT  THE BILLET ORIGINALLY CANVASSED,
   PLEASE RESPOND AS THOUGH YOU WERE, AND INCLUDE THE NAME OF YOUR
   RELIEF.
   -PP
   /THE FOLLOWING IS SET UP TO TAKE NO MORE THAN TEN MINUTES
   OF YOUR TIME.  /WE WOULD APPRECIATE YOUR CONTINUED
   PARTICIPATION.  -PP
   -UCTABLE I -LCIS OUR CODED VERSION OF THE BACKGROUND INFORMATION
   YOU PROVIDED IN RESPONSE TO  OUR INITIAL QUESTIONNAIRE.
   /PLEASE CHECK IT FOR ACCURACY AND
```

```
4*
  /PLEASE MAKE ALL CORRECTIONS AND ADDITIONS DIRECTLY ON
  THIS LETTER.
  -SP003
  -DB-----------------------------------------------------------
  -SP001
  -CN-UCTABLE I-LC-DB
  -SP001
  -LJ-UC
5*
  -EM-LC
  -DB
  -SP001
  -DB-----------------------------------------------------------
  -DB-----------------------------------------------------------
  -SP003
  -PP
  /IN THE FIRST COLUMN BELOW IS OUR ORIGINAL LIST OF INTELLIGENCE
  OUTPUTS.  /AS YOU REMEMBER, WE ASKED YOU TO INDICATE THE
  PERCENTAGE OF TIME WHICH YOU DEVOTE TO EACH OF THESE OUTPUTS.
  /THE FOLLOWING DATA WERE COMPILED FROM THE INFORMATION
  PROVIDED BY THE 321 RESPONDENTS TO THE FIRST QUESTIONNAIRE.
  /IN THE SECOND COLUMN OF -UCTABLE  II  -LCIS THE PERCENTAGE
  OF RESPONDENTS WHO INDICATED THAT THE OUTPUT WAS APPLICABLE TO
  THEIR JOBS.  /THE THIRD COLUMN CONTAINS THE MEAN PERCENTAGE OF
  TIME ENGAGED IN THAT OUTPUT BY THOSE CONSIDERING THE OUTPUT
  APPLICABLE.  /THE FOURTH COLUMN LISTS YOUR RESPONSES TO THE FIRST
  QUESTIONNAIRE.
  -SP003
  -FW60--DB
  -SP001
  -CN-UC-BFTABLE II-NF-DB-SP002
  -LJ-UC-NF-AT045PERCENT-AT056MEAN FOR-AT066-DB
  -AT045THOSE-AT056BILLETS-DB
  -AT045REPORTING-AT056INVOLVED-AT067YOUR-DB
  -TBORIGINAL LIST OF OUTPUTS
  -AT045OUTPUT-AT056WITH-AT067RESPONSE-DB
  -AT056OUTPUT-DB-SP001
  -SP001
  -CC2
  -LC-LJ-NF¬1.
  /ADMINISTRATION OF -DB
  -TB¬
  -TB/INTELLIGENCE /OFFICE
                    -AT04785%-AT05922% -AT068
```

```
6*
  -DB¬2.
  /BRIEFS AND /DEBRIEFS
                                  -AT04778%-AT059¬9%-AT068
7*
  -DB¬3.
  /BUDGETS AND /BUDGETING
                                    -AT04754%-AT059¬6%-AT068
8*
  -DB¬4.
  /CHARTS///AUDIO///VISUAL /AIDS
                                       -AT04750%-AT059¬5%-AT068
9*
  -DB¬5.
  /COUNTERINTELLIGENCE -DB
  -TB¬
  -TB/STUDIES
                                        -AT04716%-AT059¬5%-AT068
10*
  -DB¬6.
       /DATA /ANALYSIS-AT04759%-AT05915% -AT068
11*
  -DB¬7.
  /DECISIONS AND -DB
  -TB¬
  -TB/RECOMMENDATIONS
                                              -AT04786%-AT05917% -AT068
12*
  -DB¬8.
       /ESTIMATES-AT04745%-AT059¬9%-AT068
13*
  -DB¬9.
  /INTELLIGENCE /ANNEXES-DB
  -TB¬
  -TBTO /O/P/O/R/DS
  -AT04726%-AT059¬5%-AT068
14*
  /INTELLIGENCE -DB
  -DB10.
  -TB¬
  -TB/COLLECTION /PLANS
                                               -AT04735%-AT059¬6%-AT068
15*
  -DB11.
  /INTELLIGENCE /COLLECTION -DB
  -TB¬
  -TB/TASKING
                                                 -AT04743%-AT059¬7%-AT068
```

```
16*
   -DB12.
   /INTELLIGENCE /INFORMATION -DB
   -TB¬
   -TB/REPORTS-AT04737%-AT059¬7%-AT068
17*
   -DB13.
   /INTELLIGENCE /STUDIES
                                    -AT04753%-AT05910%-AT068
18*
   -DB14.
   /INTERFACE WITH /A/D/P// -DB
   -TB¬
   -TB/TELECOMMUNICATIONS
                                      -AT04753%-AT05912% -AT068
19*
   -DB15.
   /ORDERS OF /BATTLE
                                -AT04730%-AT059¬5%-AT068
20*
   -DB16.
   /PHYSICAL /SECURITY
                                 -AT04754%-AT059¬4%-AT068
21*
   -DB17.
   /TACTICAL /PLOTS
                              -AT04723%-AT059¬5%-AT068
22*
   -DB
23*
   -SP001
   -FW60-
   -FW60--DB
   -SP002
   -EM
   -CC1
   -PP /IN LIGHT OF THE RESPONSES TO OUR FIRST QUESTIONNAIRE AND
   THE INTERVIEWS, WE HAVE MODIFIED THE OUTPUT LIST SIGNIFICANTLY.
   /USING THIS REVISED LIST OF OUTPUTS (BELOW),
   PLEASE PROVIDE REVISED PERCENTAGES IN THE SPACES PROVIDED.
   -PP
24*
   /WE ASK YOU RECONSIDER THE WRITE---IN
25*
   WHICH YOU
   ADDED TO OUR ORIGINAL LIST.  /WE REQUEST THAT YOU BREAK
26*
   DOWN
```

```
    INTO BASIC ELEMENTS.  /FOR EXAMPLE, YOUR OUTPUT
27*
    MIGHT BE BROKEN DOWN TO
28*
    -PP
    /CAREFUL CONSIDERATION HAS BEEN GIVEN TO THE NEED FOR CLASSIFYING YOUR
     RESPONSE AND THE AGGREGATE DATA WHICH WILL RESULT.  /THE QUESTIONS
    INVOLVED IN THIS QUESTIONNAIRE ARE DEEMED SUFFICIENTLY GENERAL
    IN NATURE TO PRECLUDE THE NECESSITY FOR CLASSIFYING YOUR
    ANSWERS.  /IF YOU JUDGE OTHERWISE, THEN FOLLOW STANDARD
    PROCEDURES IN CLASSIFYING AND RETURNING THE QUESTIONNAIRE.
    /PLEASE RETURN THIS QUESTIONNAIRE IN THE ATTACHED
    SELF---ADDRESSED ENVELOPE.
    -PG
    -RS
    -MDY -AT020 -AT064 -MEY
    -MDX -AT020 -AT068 7 -MEX
    -TR¬
    -CC1
    ---------------------------------------------------------------
    -SP002
    -UC-CNTABLE III -DB-LC-EM
    -SP004
    @Y¬¬¬ ¬¬¬¬¬¬¬¬¬¬¬¬¬ ¬¬/REVISED
    -DB
    @Y¬¬¬ -UN/NEW LIST /OF /OUTPUTS-NU -UN/PERCENTAGES-NU -DB
    -CC2
    -SP002
    @X¬1. /ADMINISTRATION OF /INTELLIGENCE /OFFICE
        %
    =DB
    @X¬2. /RESOURCE///ORGANIZATIONAL /MANAGEMENT
        %
    =DB
    @X¬3. /BUDGETING AND /FISCAL /PLANNING
        %
    =DB
    @X¬4. /DECISIONS AND /RECOMMENDATIONS
        %
    =DB
    @X¬5. /BRIEFS AND /DEBRIEFS
        %
    =DB
    @X¬6. /LIAISON ¬¬¬¬¬¬¬
        %
    =DB
    @X¬7. /CHARTS AND /AUDIO---/VISUAL /AIDS
    ---%
```

```
-DB
@X¬8. /COUNTERINTELLIGENCE /STUDIES
    %
=DB
@X¬9. /DATA /ANALYSIS
    %
=DB
@X10. /ESTIMATES ¬¬¬¬¬
    %
=DB
@X11. /INTELLIGENCE /ANNEXES TC /O/P/O/R/DS
    %
=DB
@X12. /INTELLIGENCE /COLLECTION /PLANS
    %
=DB
@X13. /INTELLIGENCE /COLLECTION /TASKING
    %
=DB
@X14. /INTELLIGENCE /INFORA MATION /REPORTS
    %
=DB
@X15. /INTERFACE WITH /A/D/P///TELECOMMUNICATIONS
    %
=DB
@X16. /ORDERS OF /BATTLE
    %
=DB
@X17. /PHYSICAL /SECURITY
    %
=DB
@X18. /TACTICAL /PLOTS
    %
=DB
@X19. /NON---/INTELLIGENCE /RELATED /OUTPUTS
    %
=DB
@Y20. /COUNSELING///TRAINING _______%
-DB
@Y¬¬¬ ¬¬¬¬¬¬¬¬¬¬ ¬¬¬¬100%
-DB
-CC1
-------------------------------------------------------------
=SP001-------------------------------------------------------
-DB
-SP006
-AT050/R. /W. /C/H/A/P/I/N, /JR. -DB
```

```
    -AT050/L/C/D/R.¬¬¬¬¬¬¬¬¬/U/S/N-DB
    -AT050/BY DIRECTION -DB
    -AT050/COORDINATOR, /TASK-DB
    -AT050/ANALYSIS /GROUP (382)-DB
999*
```

APPENDIX F

SAMPLE I

ALGOL AND FORTRAN PROGRAMS FOR
MAILING LABEL PREPARATION, WITH EXAMPLE LABELS

```
//HUBER4 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=6
// EXEC ALGWCLG,PARM.GO='SIZE=150K',REGION.GO=250K
//ALGOL.SYSIN DD *
%ALGOL SIZE=220K
BEGIN

STRING (25) VAR001;
STRING (37) VAR003;
STRING (2) VAR006;
STRING (5) VAR002A, VAR004A, VAR016, VAR017, VAR019;
STRING (40) VAR010;
STRING (1) VAR005A, VAR007A, VAR009A, VAR011A, VAR018A, VAR020A,
   VAR024A;
STRING (2) VAR012A, VAR021A, VAR022A;
STRING (3) VAR008A, VAR023A;
STRING (4) VAR013A, VAR014A, VAR015A;
STRING (80) BUFFER;
INTEGER VAR002, VAR004, VAR005, VAR007, VAR008, VAR009,
   VAR011, VAR012, VAR013, VAR014, VAR015, VAR018, VAR020, VAR021,
   VAR022, VAR023, VAR024, QCASES, ADDRESSUIC, ADDRESSCARDNO;

PROCEDURE REWINDQCARDFILE; FORTRAN "RWND11";

PROCEDURE REWINDADDRESSFILE; FORTRAN "RWND12";

PROCEDURE GETQCARD (STRING (80) RESULT BUF); FORTRAN "READ11";

PROCEDURE GETADDRESSCARD (STRING (80) RESULT BUF); FORTRAN "READ12";

PROCEDURE PUTTOLABEL (STRING (80) VALUE BUF); FORTRAN "RITE14";

PROCEDURE PUTFROMLABEL (STRING (80) VALUE BUF); FORTRAN "RITE15";

PROCEDURE GETCASE;
   FOR I := 1 UNTIL 7 DO BEGIN
      GETQCARD (BUFFER);
      CASE T OF BEGIN
      IMAGE1;
      IMAGE2;
      ;
      ;
      ;
      ;
      ;  END;
   END;

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
```

```
    INTVALUE := POSITION := 0;
    WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
       POSITION := POSITION + 1;
    FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
       INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
    XIT: POSITION := 0;
    INTVALUE END;

PROCEDURE IMAGE1;
    BEGIN
    VAR001 := BUFFER(0|25);
    VAR002 := CONVERT (BUFFER(25|5));
    VAR002A := BUFFER(25|5);
    VAR003 := BUFFER(30|37);
    VAR004 := CONVERT (BUFFER(67|5));
    VAR004A := BUFFER(67|5);
    VAR005 := CONVERT (BUFFER(72|1));
    VAR005A := BUFFER(72|1);
    VAR006 := BUFFER (73|2);
    VAR007 := CONVERT (BUFFER(75|1));
    VAR007A := BUFFER(75|1);
    VAR008 := CONVERT (BUFFER(76|3));
    VAR008A := BUFFER(76|3);
    VAR009 := CONVERT (BUFFER(79|1));
    VAR009A := BUFFER(79|1);
    END;

PROCEDURE IMAGE2;
    BEGIN
    VAR010 := BUFFER(0|40);
    VAR011 := CONVERT (BUFFER(40|1));
    VAR011A := BUFFER(40|1);
    VAR012 := CONVERT (BUFFER(41|2));
    VAR012A := BUFFER(41|2);
    VAR013 := CONVERT (BUFFER(43|4));
    VAR013A := BUFFER(43|4);
    VAR014 := CONVERT (BUFFER(47|4));
    VAR014A := BUFFER(47|4);
    VAR015 := CONVERT (BUFFER(51|4));
    VAR015A := BUFFER(51|4);
    VAR016 := BUFFER(55|5);
    VAR017 := BUFFER(60|5);
    VAR018 := CONVERT (BUFFER(65|1));
    VAR018A := BUFFER(65|1);
    VAR019 := BUFFER(66|5);
    VAR020 := CONVERT (BUFFER(71|1));
    VAR020A := BUFFER(71|1);
    VAR021 := CONVERT (BUFFER(72|2));
```

```
    VAR021A := BUFFER(72|2);
    VAR022 := CONVERT (BUFFER(74|2));
    VAR022A := BUFFER(74|2);
    VAR023 := CONVERT (BUFFER(76|3));
    VAR023A := BUFFER(76|3);
    VAR024 := CONVERT (BUFFER(79|1));
    VAR024A := BUFFER(79|1);
    END;

PROCEDURE MAKELABELS;
    BEGIN
    PROCEDURE COMPRESS (STRING (80) VALUE RESULT BUF);
       IF BUF ¬= " " THEN BEGIN
       FOR X := 0 UNTIL 77 DO IF BUF(X|1) = "/" THEN
       FOR Y := X UNTIL 78 DO BUF(Y|1) := BUF(Y+1|1);
       WHILE (BUF(0|1) = " ") AND (BUF ¬= " ") DO
          BUF(0|70) := BUF(1|70);
       END;
    STRING (80) ARRAY LABELLINE (1::12);
    STRING (85) DUMMYNAME;
    INTEGER CTR;
    LOGICAL TWOWORDNAME;

    FOR X := 1 UNTIL 12 DO LABELLINE(X) := " ";
    IF VAR004 <= ADDRESSUIC THEN RESTARTADDRESS;
    WHILE VAR004 > ADDRESSUIC DO GETNEXTADDRESS;
    IF VAR004 = ADDRESSUIC THEN WHILE VAR004 = ADDRESSUIC DO
       BEGIN
       BUFFER(0|10) := " ";
       WHILE (BUFFER(10|1) = " ") AND (BUFFER(10|60) ¬= " ") DO
          FOR X := 10 UNTIL 70 DO BUFFER(X|1) := BUFFER(X+1|1);
       IF (ADDRESSCARDNO >= 1) AND (ADDRESSCARDNO <= 5) THEN
          LABELLINE(ADDRESSCARDNO) := BUFFER(10|60);
       FOR X := 1 UNTIL 3 DO FOR Y := 70 STEP -1 UNTIL 10 DO
          BUFFER(Y+1|1) := BUFFER(Y|1);
       GETADDRESSCARD(BUFFER);
       ADDRESSUIC := CONVERT(BUFFER(0|5));
       ADDRESSCARDNO := CONVERT(BUFFER(5|1));
       END;
    FOR X := 5 STEP -1 UNTIL 1 DO LABELLINE(X+1) := LABELLINE(X);
    LABELLINE(1) := " ";
    LABELLINE(1)(25|3) := VAR008A;
    FOR X := 2 UNTIL 6 DO COMPRESS(LABELLINE(X));
    COMMENT THIS WRITES THE SMALL "FROM LABEL";
    FOR X := 1 UNTIL 8 DO PUTFROMLABEL(LABELLINE(X)(0|34));
    LABELLINE(9) := "ATTN:";
    LABELLINE(10) := VAR010;
    COMPRESS(LABELLINE(10));
```

```
FOR X := 0 UNTIL 50 DO IF LABELLINE(10)(X|1) = "#" THEN
   LABELLINE(10)(X|1) := " ";
COMPRESS(LABELLINE(10));
FOR X := 45 STEP -1 UNTIL 0 DO
   LABELLINE(10)(X+5|1) := LABELLINE(10)(X|1);
LABELLINE(10)(0|5) := " ";
LABELLINE(10)(0|4) := IF ¬((VAR011 >= 1) AND (VAR011 <= 6))
   THEN " " ELSE CASE VAR011 OF
   (" MR.", " ", "  LT", "LCDR", " CDR", "CAPT");
COMPRESS(LABELLINE(10));
FOR X := 1 UNTIL 12 DO FOR Y := 60 STEP -1 UNTIL 0 DO
   LABELLINE(X)(Y+2|1) := LABELLINE(X)(Y|1);
FOR X := 1 UNTIL 12 DO LABELLINE(X)(0|2) := " ";
COMMENT THIS WRITES THE LARGE "TO LABEL";
FOR X := 1 UNTIL 12 DO PUTTOLABEL(LABELLINE(X)(0|40));
LABELLINE(9) := LABELLINE(10) := " ";
TWOWORDNAME := FALSE;
DUMMYNAME := VAR010;
FOR X := 0 UNTIL 38 DO IF (DUMMYNAME(X|6) = "/JR.  ")
   OR (DUMMYNAME(X|6) = "/I/I  ")
   OR (DUMMYNAME(X|6) = "/I/I/I")
   THEN DUMMYNAME(X|6) := " ";
FOR X := 0 UNTIL 40 DO IF DUMMYNAME(X|1) = "," THEN
   DUMMYNAME(X|1) := " ";
CTR := 40;
WHILE DUMMYNAME(CTR|1) = " " DO CTR := CTR -1;
DUMMYNAME(CTR + 1|1) := ":";
FOR X := 0 UNTIL 40 DO IF DUMMYNAME(X|1) = "#" THEN BEGIN
   CTR := X; TWOWORDNAME := TRUE; END;
IF ¬TWOWORDNAME THEN WHILE (DUMMYNAME(CTR|1) ¬= " ") AND
   (CTR > 0) DO CTR := CTR -1;
IF CTR = 0 THEN WRITE (VAR008, "CTR = 0");
LABELLINE(10)(0|40) := DUMMYNAME(CTR+1|40);
COMPRESS(LABELLINE(10));
FOR X := 70 STEP -1 UNTIL 0 DO LABELLINE(10)(X+5|1) :=
   LABELLINE(10)(X|1);
LABELLINE(10)(0|5) := " ";
LABELLINE(10)(0|4) := IF ¬((VAR011 >= 1) AND (VAR011 <= 6))
   THEN " " ELSE CASE VAR011 OF
   (" MR.", " ", "  LT", "LCDR", " CDR", "CAPT");
COMPRESS(LABELLINE(10));
FOR X := 70 STEP -1 UNTIL 0 DO LABELLINE(10)(X+5|1) :=
   LABELLINE(10)(X|1);
LABELLINE(10)(0|5) := "DEAR ";
FOR X := 70 STEP -1 UNTIL 0 DO
   LABELLINE(10)(X+2|1) := LABELLINE(10)(X|1);
LABELLINE(10)(0|2) := " ";
COMMENT THIS WRITES THE INSIDE LABEL "DEAR LCDR SEA";
```

```
    FOR X := 1 UNTIL 12 DO PUTTOLABEL(LABELLINE(X)(0|40));
    FOR X := 1 UNTIL 12 DO LABELLINE(X) := " ";
    LABELLINE(1)(25|3) := VAR008A;
    LABELLINE(2)(2|30) := "SUPERINTENDENT";
    LABELLINE(3)(2|30) := "NAVAL POSTGRADUATE SCHOOL";
    LABELLINE(4)(2|30) := "(ATTN:  CODE 382/T.A. GROUP)";
    LABELLINE(5)(2|30) := "MONTEREY, CALIFORNIA 93940";
    COMMENT THIS WRITES THE SMALL "FROM LABEL";
    FOR X := 1 UNTIL 8 DO PUTFROMLABEL(LABELLINE(X)(0|34));
    COMMENT THIS WRITES THE LARGE "TO LABEL";
    FOR X := 9, 1, 2, 9, 3, 9, 4, 9, 5, 9, 9, 9 DO
       PUTTOLABEL(LABELLINE(X)(0|40));
    END;

PROCEDURE RESTARTADDRESS;
    BEGIN
    ADDRESSUIC := ADDRESSCARDNO := 0;
    REWINDADDRESSFILE;
    END;

PROCEDURE GETNEXTADDRESS;
    BEGIN
    ADDRESSCARDNO := 0;
    WHILE ADDRESSCARDNO ¬= 1 DO
       BEGIN
       GETADDRESSCARD(BUFFER);
       ADDRESSUIC := CONVERT(BUFFER(0|5));
       ADDRESSCARDNO := CONVERT(BUFFER(5|1));
       END;
    END;

PROCEDURE XADDRESSLABELS;
    BEGIN
    FOR X := 1 UNTIL 25 DO
    BEGIN
    FOR Y := 1 UNTIL 10 DO PUTTOLABEL
       ("XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX");
    FOR Y := 1, 2 DO PUTTOLABEL (" ");
    END;
    FOR X := 1 UNTIL 25 DO
    BEGIN
    FOR Y := 1 UNTIL 7 DO PUTFROMLABEL
       ("XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX");
    PUTFROMLABEL (" ");
    END;
    END;

WRITE ("START RUN");
```

```
RESTARTADDRESS;
REWINDQCARDFILE;
GETQCARD(BUFFER);
QCASES := CONVERT(BUFFER(0|3));
XADDRESSLABELS;
FOR I := 1 UNTIL QCASES DO
    BEGIN
    GETCASE;
    WRITE (VAR008A);
    MAKELABELS;
    END;
WRITE ("END RUN");
XADDRESSLABELS;
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//             DD DISP=SHR,DSN=SYS1.FORTLIB
//LINK.SYSPRINT DD DUMMY
//LINK.SYSIN   DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.FDALG3,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT11F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QCARDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,1)),
//   DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT12F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.MAILER,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(10,2)),
//   DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT14F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.BIGLBLS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,2)),
//   DISP=(NEW,KEEP),LABEL=RETPD=30
//GO.FT15F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.LTLLBLS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,2)),
//   DISP=(NEW,KEEP),LABEL=RETPD=30
//GO.FT07F001 DD DUMMY
//GO.SYSIN  DD *
```

```
//HUBTOLBL JOB (2600,0678,YS42),'HUBER,E.W.',TIME=1
// EXEC FORTCLG
//FORT.SYSIN DD *
      DIMENSION ARRAY (20)
   10 FORMAT (20A4)
   20 FORMAT (1X,20A4)
   90 READ (15,10,END=99) ARRAY
      WRITE (6,20) ARRAY
      GO TO 90
   99 STOP
      END
//GO.FT06F001 DD SYSOUT=F,SPACE=(CYL,(5,1))
//GO.FT15F001 DD UNIT=2311,VOL=SER=SYS003,DISP=SHR,LABEL=(,,,IN),
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),DSNAME=S2600.BIGLBLS
//GO.SYSIN DD *
```

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DIRECTOR
NAVAL OCEAN SURVEILLANCE
INFORMATION CENTER
4301 SUITLAND ROAD
WASHINGTON, D. C. 20390

ATTN:
LCDR SINCLAIR S. MARTEL

200

DIRECTOR
NAVAL OCEAN SURVEILLANCE
INFORMATION CENTER
4301 SUITLAND ROAD
WASHINGTON, D. C. 20390

DEAR LCDR MARTEL:

200

SUPERINTENDENT

NAVAL POSTGRADUATE SCHOOL

(ATTN: CODE 382/T.A. GROUP)

MONTEREY, CALIFORNIA 93940

```
//HUBFMLBL JOB (2600,0678,YS42),'HUBER,E.W.',TIME=1
// EXEC FORTCLG
//FORT.SYSIN DD *
      DIMENSION ARRAY (20)
   10 FORMAT (20A4)
   20 FORMAT (1X,20A4)
   90 READ (16,10,END=99) ARRAY
      WRITE (6,20) ARRAY
      GO TO 90
   99 STOP
      END
//GO.FT06F001 DD SYSOUT=F,SPACE=(CYL,(5,1))
//GO.FT16F001 DD UNIT=2311,VOL=SER=SYS003,DISP=SHR,
//       DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),DSNAME=S2600.LTLLBLS,
//       LABEL=(,,,IN)
//GO.SYSIN DD *
```

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200

DIRECTOR
NAVAL OCEAN SURVEILLANCE
INFORMATION CENTER
4301 SUITLAND ROAD
WASHINGTON, D. C. 20390

200

SUPERINTENDENT
NAVAL POSTGRADUATE SCHOOL
(ATTN: CODE 382/T.A. GROUP)
MONTEREY, CALIFORNIA 93940

201

DIRECTOR
NAVAL OCEAN SURVEILLANCE
INFORMATION CENTER
4301 SUITLAND ROAD
WASHINGTON, D. C. 20390

201

SUPERINTENDENT
NAVAL POSTGRADUATE SCHOOL
(ATTN: CODE 382/T.A. GROUP)
MONTEREY, CALIFORNIA 93940

202

DIRECTOR
NAVAL OCEAN SURVEILLANCE
INFORMATION CENTER
4301 SUITLAND ROAD
WASHINGTON, D. C. 20390

APPENDIX F

SAMPLE J

ALGOL SOURCE PROGRAM TO MERGE QCARDS AND ICARDS FILES

```
//HUBER004 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=50,TYPRUN=HOLD
// EXEC ALGWCLG,PARM.GO='SIZE=150K',REGION.GO=230K
//ALGOL.SYSIN DD *
%ALGOL
BEGIN

STRING (1) ARRAY EDUMATRIX (1::46,1::2);
STRING (1) ICODER;
STRING (3) VAR008A, VAR023A, VAR059A, VAR067A, VAR075A, VAR081A,
   VAR085A;
STRING (80) BUFFER;
LOGICAL IEXISTS, BADEDUCARD, EDUCARDUSED;
INTEGER QCASES, ICASENO;

PROCEDURE REWINDQCARDFILE; FORTRAN "RWND11";

PROCEDURE REWINDICARDFILE; FORTRAN "RWND12";

PROCEDURE GETQCARD (STRING (80) RESULT BUF); FORTRAN "READ11";

PROCEDURE GETICARD (STRING (80) RESULT BUF); FORTRAN "READ12";

PROCEDURE PUTQICARD (STRING (80) VALUE BUF); FORTRAN "RITE14";

PROCEDURE GETPUTCASE;
   BEGIN
   FOR T := 1 UNTIL 7 DO BEGIN
      GETQCARD (BUFFER);
      PUTQICARD (BUFFER);
      CASE T OF BEGIN
         VAR008A := BUFFER(76|3);
         VAR023A := BUFFER(76|3);
         VAR059A := BUFFER(76|3);
         VAR067A := BUFFER(76|3);
         VAR075A := BUFFER(76|3);
         VAR081A := BUFFER(76|3);
         VAR085A := BUFFER(76|3) END;
      END;
   IF ¬((VAR008A = VAR023A) AND (VAR008A = VAR059A) AND
      (VAR008A = VAR067A) AND (VAR008A = VAR075A) AND
      (VAR008A = VAR081A) AND (VAR008A = VAR085A)) THEN WRITE
      ("CASE # MISMATCH, CASE NUMBER ", VAR008A);
   END;

PROCEDURE BUILDMATRIX;
   BEGIN
   PROCEDURE BUILDROW (INTEGER VALUE ROW);
      BEGIN
```

```
    EDUMATRIX(ROW,1) := BUFFER(7|1);
    EDUMATRIX(ROW,2) := BUFFER(8|1);
    FOR X := 7, 8 DO IF (CONVERT(BUFFER(X|1)) < 1) OR
       (CONVERT(BUFFER(X|1)) > 4) THEN BADEDUCARD := TRUE;
    EDUCARDUSED := TRUE;
    END;

FOR X := 1 UNTIL 46 DO FOR Y := 1, 2 DO EDUMATRIX(X,Y) := "9";
IEXISTS := BADEDUCARD := EDUCARDUSED := FALSE;
REWINDICARDFILE;
GETICARD(BUFFER);
ICASENO := CONVERT(BUFFER(0|3));
WHILE ICASENO ¬= 999 DO
    BEGIN
    IF ICASENO = CONVERT(VAR008A) THEN
       BEGIN
       IEXISTS := TRUE;
       ICODER := BUFFER(3|1);
       IF (CONVERT(BUFFER(4|3)) = 011) THEN BUILDROW(1);
       IF (CONVERT(BUFFER(4|3)) = 012) THEN BUILDROW(2);
       IF (CONVERT(BUFFER(4|3)) = 013) THEN BUILDROW(3);
       IF (CONVERT(BUFFER(4|3)) = 014) THEN BUILDROW(4);
       IF (CONVERT(BUFFER(4|3)) = 021) THEN BUILDROW(5);
       IF (CONVERT(BUFFER(4|3)) = 031) THEN BUILDROW(6);
       IF (CONVERT(BUFFER(4|3)) = 032) THEN BUILDROW(7);
       IF (CONVERT(BUFFER(4|3)) = 033) THEN BUILDROW(8);
       IF (CONVERT(BUFFER(4|3)) = 034) THEN BUILDROW(9);
       IF (CONVERT(BUFFER(4|3)) = 035) THEN BUILDROW(10);
       IF (CONVERT(BUFFER(4|3)) = 036) THEN BUILDROW(11);
       IF (CONVERT(BUFFER(4|3)) = 041) THEN BUILDROW(12);
       IF (CONVERT(BUFFER(4|3)) = 051) THEN BUILDROW(13);
       IF (CONVERT(BUFFER(4|3)) = 061) THEN BUILDROW(14);
       IF (CONVERT(BUFFER(4|3)) = 062) THEN BUILDROW(15);
       IF (CONVERT(BUFFER(4|3)) = 063) THEN BUILDROW(16);
       IF (CONVERT(BUFFER(4|3)) = 064) THEN BUILDROW(17);
       IF (CONVERT(BUFFER(4|3)) = 065) THEN BUILDROW(18);
       IF (CONVERT(BUFFER(4|3)) = 066) THEN BUILDROW(19);
       IF (CONVERT(BUFFER(4|3)) = 067) THEN BUILDROW(20);
       IF (CONVERT(BUFFER(4|3)) = 071) THEN BUILDROW(21);
       IF (CONVERT(BUFFER(4|3)) = 072) THEN BUILDROW(22);
       IF (CONVERT(BUFFER(4|3)) = 073) THEN BUILDROW(23);
       IF (CONVERT(BUFFER(4|3)) = 081) THEN BUILDROW(24);
       IF (CONVERT(BUFFER(4|3)) = 082) THEN BUILDROW(25);
       IF (CONVERT(BUFFER(4|3)) = 083) THEN BUILDROW(26);
       IF (CONVERT(BUFFER(4|3)) = 084) THEN BUILDROW(27);
       IF (CONVERT(BUFFER(4|3)) = 085) THEN BUILDROW(28);
       IF (CONVERT(BUFFER(4|3)) = 086) THEN BUILDROW(29);
       IF (CONVERT(BUFFER(4|3)) = 091) THEN BUILDROW(30);
```

```
            IF (CONVERT(BUFFER(4|3)) = 092) THEN BUILDROW(31);
            IF (CONVERT(BUFFER(4|3)) = 093) THEN BUILDROW(32);
            IF (CONVERT(BUFFER(4|3)) = 094) THEN BUILDROW(33);
            IF (CONVERT(BUFFER(4|3)) = 101) THEN BUILDROW(34);
            IF (CONVERT(BUFFER(4|3)) = 102) THEN BUILDROW(35);
            IF (CONVERT(BUFFER(4|3)) = 103) THEN BUILDROW(36);
            IF (CONVERT(BUFFER(4|3)) = 104) THEN BUILDROW(37);
            IF (CONVERT(BUFFER(4|3)) = 111) THEN BUILDROW(38);
            IF (CONVERT(BUFFER(4|3)) = 112) THEN BUILDROW(39);
            IF (CONVERT(BUFFER(4|3)) = 113) THEN BUILDROW(40);
            IF (CONVERT(BUFFER(4|3)) = 121) THEN BUILDROW(41);
            IF (CONVERT(BUFFER(4|3)) = 122) THEN BUILDROW(42);
            IF (CONVERT(BUFFER(4|3)) = 123) THEN BUILDROW(43);
            IF (CONVERT(BUFFER(4|3)) = 124) THEN BUILDROW(44);
            IF (CONVERT(BUFFER(4|3)) = 125) THEN BUILDROW(45);
            IF (CONVERT(BUFFER(4|3)) = 126) THEN BUILDROW(46);
            IF ¬EDUCARDUSED THEN WRITEON
               (" INVALID EDU CODE, ", BUFFER(4|3));
            IF BADEDUCARD THEN WRITEON
               (" INVALID EDU LEVEL, ", BUFFER(7|2));
            BADEDUCARD := EDUCARDUSED := FALSE;
            END;
         GETICARD(BUFFER);
         ICASEND := CONVERT(BUFFER(0|3));
         END;
      END;

   PROCEDURE PUTMATRIX;
      BEGIN
      IF IEXISTS THEN FOR X := 1 UNTIL 46 DO FOR Y := 1, 2 DO
         IF ((EDUMATRIX(X,Y) = "9") OR (EDUMATRIX(X,Y) = " "))
         THEN EDUMATRIX(X,Y) := "1";
      FOR X := 1, 2 DO
         BEGIN
         BUFFER := " ";
         FOR Y := 1 UNTIL 46 DO BUFFER(Y-1|1) := EDUMATRIX(Y,X);
         BUFFER(73|1) := IF IEXISTS THEN ICODER ELSE "9";
         BUFFER(74|2) := IF X = 1 THEN "01" ELSE "02";
         BUFFER(76|3) := VAR008A;
         BUFFER(79|1) := "8";
         PUTQICARD(BUFFER);
         END;
      END;

   INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
      BEGIN INTEGER INTVALUE, POSITION;
      INTVALUE := POSITION := 0;
      WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
```

```
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

WRITE ("START RUN");
REWINDQCARDFILE;
REWINDICARDFILE;
GETQCARD(BUFFER);
QCASES := CONVERT(BUFFER(0|3));
FOR X := 1 UNTIL QCASES DO
   BEGIN
   GETPUTCASE;
   WRITE (VAR008A);
   BUILDMATRIX;
   PUTMATRIX;
   END;
WRITE ("END RUN");
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//             DD DISP=SHR,DSN=SYS1.FORTLIB
//LINK.SYSPRINT DD DUMMY
//LINK.SYSIN   DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.FOALG3,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT11F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QCARDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(5,1)),
//   DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT12F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.ICARDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(10,2)),
//   DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT14F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QICARDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),SPACE=(CYL,(25,2)),
//   DISP=(NEW,KEEP),LABEL=RETPD=30
//GO.FT07F001 DD DUMMY
//GO.SYSIN  DD *
```

APPENDIX F

SAMPLE K

INTELLB SOURCE DECK SPSS PROGRAM

```
//HUBER3 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=1
// EXEC SPSS,REGION=250K
//FT04F001 DD DSNAME=S2600.INTELLB,UNIT=2311,VOL=SER=SYS003,
// DISP=(NEW,KEEP),DCB=BLKSIZE=3624,LABEL=EXPDT=75100,
// SPACE=(CYL,(3,2),RLSE)
//FT08F001    DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QICARDS,
//  DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),DISP=SHR,LABEL=(,,,IN)
//SYSIN DD *
FILE NAME       INTELLB  QUESTIONNAIRE & INTERVIEW MERGED FILE
RUN NAME        YS-42 T.A. GROUP, QUESTIONNAIRE & INTERVIEW FILE
VARIABLE LIST   VAR001 TO VAR186
# OF CASES      325
INPUT MEDIUM    DISK
INPUT FORMAT    FIXED (A25,F5.0,A37,F5.0,F1.0,A2,F1.0,F3.0,F1.0/
                A40,F1.0,F2.0,3F4.0,2A5,F1.0,A5,F1.0,2F2.0,F3.0,F1.0/
                17(F3.0,F1.0),8X,F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,2F3.0,35X,F3.0,F1.0/
                A75,F1.0,F3.0,F1.0/
                46F1.0,27X,F1.0,F2.0,F3.0,F1.0/
                46F1.0,27X,F1.0,F2.0,F3.0,F1.0)
MISSING VALUES  VAR005,VAR007,VAR009,VAR011,VAR018,VAR020,VAR024,VAR026,
                VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,VAR042,
                VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,VAR058,
                VAR060,VAR068,VAR076,VAR082,VAR084,VAR086 TO VAR132,
                VAR137 TO VAR182 (9)/
                VAR012,VAR021,VAR022 (99)/
                VAR008,VAR023,VAR025,VAR027,VAR029,VAR031,VAR033,VAR035,
                VAR037,VAR039,VAR041,VAR043,VAR045,VAR047,VAR049,VAR051,
                VAR053,VAR055,VAR057,VAR059,VAR063,VAR066,VAR067,VAR071,
                VAR074,VAR075,VAR079,VAR080,VAR081,VAR085 (999)/
                VAR062,VAR065,VAR070,VAR073,VAR078 ('   ')/
                VAR013 TO VAR015 (9999)/
                VAR002,VAR004,VAR019 (99999)/
                VAR061,VAR064,VAR069,VAR072,VAR077
                ('                                   ')
VAR LABELS      VAR001,COMMAND NAME/
                VAR002,BILLET SEQUENCE CODE/
                VAR003,BILLET TITLE/
                VAR004,UNIT IDENTIFICATION CODE/
                VAR005,CONUS-OVERSEAS/
                VAR006,COUNTRY-STATE CODE/
                VAR007,CODER CODE/
                VAR008,CARD #1 SEQUENCE/
                VAR009,CARD ONE NUMBER/
                VAR010,RESPONDENTS NAME/
                VAR011,RESPONDENTS RANK/
```

```
VAR012,RESPONDENTS AGE/
VAR013,RESPONDENTS DESIGNATOR/
VAR014,RESPONDENTS PREVIOUS DESIGNATOR/
VAR015,RESPONDENTS FIRST DESIGNATOR/
VAR016,BILLET SUBSPECIALTY CODE/
VAR017,RESPONDENTS SUBSPECIALTY CODE/
VAR018,EDUCATIONAL LEVEL/
VAR019,TRAINING USED IN THIS BILLET/
VAR020,FIRST INTELL BILLET, NO-YES/
VAR021,YEARS PREVIOUS INTELL EXPERIENCE/
VAR022,MONTHS IN THIS BILLET/
VAR023,CARD #2 SEQUENCE/
VAR024,CARD TWO NUMBER/
VAR025,% INTELL OFFICE ADMIN/
VAR026,VALID INTELL OFFICE ADMIN/
VAR027,% BRIEFS AND DEBRIEFS/
VAR028,VALID BRIEFS AND DEBRIEFS/
VAR029,% BUDGETS AND BUDGETING/
VAR030,VALID BUDGETS AND BUDGETING/
VAR031,% CHARTS AND AUDIO-VISUAL AIDS/
VAR032,VALID CHARTS AND AUDIO-VISUAL AIDS/
VAR033,% COUNTERINTELLIGENCE STUDIES/
VAR034,VALID COUNTERINTELLIGENCE STUDIES/
VAR035,% DATA ANALYSIS/
VAR036,VALID DATA ANALYSIS/
VAR037,% DECISIONS AND RECOMMENDATIONS/
VAR038,VALID DECISIONS AND RECOMMENDATIONS/
VAR039,% ESTIMATES/
VAR040,VALID ESTIMATES/
VAR041,% INTELL ANNEXES TO OPORDS/
VAR042,VALID INTELL ANNEXES TO OPORDS/
VAR043,% INTELL COLLECTION PLANS/
VAR044,VALID INTELL COLLECTION PLANS/
VAR045,% INTELL COLLECTION TASKING/
VAR046,VALID INTELL COLLECTION TASKING/
VAR047,% INTELLIGENCE REPORTS/
VAR048,VALID INTELLIGENCE REPORTS/
VAR049,% INTELLIGENCE STUDIES/
VAR050,VALID INTELLIGENCE STUDIES/
VAR051,% INTERFACE ADP-TELECOMMS/
VAR052,VALID INTERFACE ADP-TELECOMMS/
VAR053,% ORDERS OF BATTLE/
VAR054,VALID ORDERS OF BATTLE/
VAR055,% PHYSICAL SECURITY/
VAR056,VALID PHYSICAL SECURITY/
VAR057,% TACTICAL PLOTS/
VAR058,VALID TACTICAL PLOTS/
VAR059,CARD #3 SEQUENCE/
```

```
VAR060,CARD THREE NUMBER/
VAR061,FIRST INTELL OUTPUT ADDED/
VAR062,CODED FIRST ADDITIONAL OUTPUT/
VAR063,% FIRST INTELL OUTPUT ADDED/
VAR064,SECOND INTELL OUTPUT ADDED/
VAR065,CODED SECOND ADDITIONAL OUTPUT/
VAR066,% SECOND INTELL OUTPUT ADDED/
VAR067,CARD #4 SEQUENCE/
VAR068,CARD FOUR NUMBER/
VAR069,THIRD INTELL OUTPUT ADDED/
VAR070,CODED THIRD ADDITIONAL OUTPUT/
VAR071,% THIRD INTELL OUTPUT ADDED/
VAR072,FOURTH INTELL OUTPUT ADDED/
VAR073,CODED FOURTH ADDITIONAL OUTPUT/
VAR074,% FOURTH INTELL OUTPUT ADDED/
VAR075,CARD #5 SEQUENCE/
VAR076,CARD FIVE NUMBER/
VAR077,FIFTH INTELL OUTPUT ADDED/
VAR078,CODED FIFTH ADDITIONAL OUTPUT/
VAR079,% FIFTH INTELL OUTPUT ADDED/
VAR080,% NON-INTELLIGENCE OUTPUTS/
VAR081,CARD #6 SEQUENCE/
VAR082,CARD SIX NUMBER/
VAR083,RESPONDENTS COMMENTS/
VAR084,ARE COMMENTS CONTINUED?/
VAR085,CARD #7 SEQUENCE/
VAR086,CARD SEVEN NUMBER/
VAR087,U-COLLEGE ALGEBRA/
VAR088,U-BEGIN CALCULUS/
VAR089,U-PROBS & STATS/
VAR090,U-ADV. CALCULUS/
VAR091,U-FOREIGN LANGUAGE/
VAR092,U-USSR/
VAR093,U-CHINA/
VAR094,U-MID EAST/
VAR095,U-EUROPE/
VAR096,U-LATIN AMERICA/
VAR097,U-AFRICA/
VAR098,U-OPS ANALYSIS/
VAR099,U-INT'L RELATIONS/
VAR100,U-UW ACOUSTICS/
VAR101,U-SONAR SYSTEMS/
VAR102,U-COMM SYSTEMS/
VAR103,U-RADAR SYSTEMS/
VAR104,U-OPTICS/
VAR105,U-LASERS/
VAR106,U-COLLECTION SYSTEMS/
VAR107,U-NAT'L & NAV BUDGET PROC/
```

```
VAR108,U-THREAT & NET ASSESSMENT/
VAR109,U-NATIONAL SEC & INTELL ORGN/
VAR110,U-SOVIET NAVAL/
VAR111,U-SOVIET AIR FORCE/
VAR112,U-SOVIET GROUND/
VAR113,U-SOVIET PVO/
VAR114,U-SOVIET STRAT ROCKET TROOPS/
VAR115,U-SOVIET-MER-FISH-OCEANO/
VAR116,U-COLLECTION SYSTEMS/
VAR117,U-NAVAL STRAT-GENL PURPOSE/
VAR118,U-OTHER STRAT-GENL PURPOSE/
VAR119,U-ALLIED CAPABILITY/
VAR120,U-SYS DESIGN-ANAL-MGMT/
VAR121,U-HARDWARE OPER/
VAR122,U-SOFTWARE-PROGRAMMING/
VAR123,U-BASIC INTERFACE OPS/
VAR124,U-BRIEFING/
VAR125,U-WRITING/
VAR126,U-ORGANIZ OF THOUGHT/
VAR127,U-COLLECTION SYSTEMS/
VAR128,U-PERT/
VAR129,U-MGMT BY OBJECTIVES/
VAR130,U-PERSONNEL MGMT/
VAR131,U-FINANCIAL MGMT/
VAR132,U-LABOR RELATIONS/
VAR133,INTERVIEW CODER NUMBER/
VAR134,CARD #8 SUBCARD NUMBER/
VAR135,CARD #801 SEQUENCE/
VAR136,CARD #801 NUMBER/
VAR137,N-COLLEGE ALGEBRA/
VAR138,N-BEGIN CALCULUS/
VAR139,N-PROBS & STATS/
VAR140,N-ADV. CALCULUS/
VAR141,N-FOREIGN LANGUAGE/
VAR142,N-USSR/
VAR143,N-CHINA/
VAR144,N-MID EAST/
VAR145,N-EUROPE/
VAR146,N-LATIN AMERICA/
VAR147,N-AFRICA/
VAR148,N-OPS ANALYSIS/
VAR149,N-INT'L RELATIONS/
VAR150,N-UW ACOUSTICS/
VAR151,N-SONAR SYSTEMS/
VAR152,N-COMM SYSTEMS/
VAR153,N-RADAR SYSTEMS/
VAR154,N-OPTICS/
VAR155,N-LASERS/
```

```
               VAR156,N-COLLECTION SYSTEMS/
               VAR157,N-NAT'L & NAV BUDGET PROC/
               VAR158,N-THREAT & NET ASSESSMENT/
               VAR159,N-NATIONAL SEC & INTELL ORGN/
               VAR160,N-SOVIET NAVAL/
               VAR161,N-SOVIET AIR FORCE/
               VAR162,N-SOVIET GROUND/
               VAR163,N-SOVIET PVO/
               VAR164,N-SOVIET STRAT ROCKET TROOPS/
               VAR165,N-SOVIET-MER-FISH-OCEANO/
               VAR166,N-COLLECTION SYSTEMS/
               VAR167,N-NAVAL STRAT-GENL PURPOSE/
               VAR168,N-OTHER STRAT-GENL PURPOSE/
               VAR169,N-ALLIED CAPABILITY/
               VAR170,N-SYS DESIGN-ANAL-MGMT/
               VAR171,N-HARDWARE OPER/
               VAR172,N-SOFTWARE-PROGRAMMING/
               VAR173,N-BASIC INTERFACE OPS/
               VAR174,N-BRIEFING/
               VAR175,N-WRITING/
               VAR176,N-ORGANIZ OF THOUGHT/
               VAR177,N-COLLECTION SYSTEMS/
               VAR178,N-PERT/
               VAR179,N-MGMT BY OBJECTIVES/
               VAR180,N-PERSONNEL MGMT/
               VAR181,N-FINANCIAL MGMT/
               VAR182,N-LABOR RELATIONS/
               VAR183,INTERVIEW CODER NUMBER/
               VAR184,CARD #8 SUBCARD NUMBER/
               VAR185,CARD #802 SEQUENCE/
               VAR186,CARD #802 NUMBER
COMMENT        THE FOLLOWING UNIT IDENTIFICATION CODES LISTED FOR
               VAR004 ARE VALID UIC'S UNLESS THE NUMBER BEGINS WITH 999XX.
COMMENT        SEQUENCE NUMBERS, VARS 008, 023, 059, 067, 075, 081, AND 085,
               ARE KEYED IN THE FOLLOWING MANNER:
               LCDR MOUNT HAS 001 THROUGH 199
               LT FOSTER HAS 200 THROUGH 399
               LT BICKELL HAS 400 THROUGH 599
               LT HUBER HAS 600 THROUGH 799
               LT WATSON HAS 800 THROUGH 999
VALUE LABELS   VAR004 (03360) USS SARATOGA
                      (03362) USS INDEPENDENCE
                      (03363) USS KITTY HAWK
                      (03321) USS HANCOCK
                      (03334) USS ORISKANY
                      (03341) USS MIDWAY
                      (03342) USS F D ROOSEVELT
                      (03343) USS CORAL SEA
```

```
(03359) USS FORRESTAL
(03361) USS RANGER
(03364) USS CONSTELLATION
(03366) USS AMERICA
(03367) USS KENNEDY
(03365) USS ENTERPRISE
(05840) USS BLUE RIDGE
(20001) USS MOUNT WHITNEY
(62856) NAF LAJES
(60200) NAS CECIL FIELD
(00213) NAS KEY WEST
(57007) COMIDEASTFOR
(00309) NB GUANTANAMO
(62769) NB SUBIC
(64591) JSTPS
(99901) COMCARGRU ONE
(99902) COMCARGRU TWO
(99903) COMCARGRU THREE
(99904) COMCARGRU FOUR
(99905) COMCARGRU FIVE
(99906) COMCARGRU SIX
(99907) COMCARGRU SEVEN
(63126) MISSILE CENTER PT MUGU
(30883) NOSIC
(66967) FOSIC NORFOLK
(66842) FOSIC LONDON
(66600) FOSIF ROTA
(66970) FOSIF WESTPAC
(63013) NUWEPNTRAGRUPAC
(57012) COMNAVAIRLANT
(57025) COMNAVAIRPAC
(09550) COMFAIRMED
(09117) COMFAIRKEF
(99908) COMPATWING ONE
(63981) COMPATWINGSLANT
(05917) COMPATWINGSPAC
(57015) COMPHIBLANT
(57019) COMPHIBPAC
(55297) COMPHIBRON ONE
(55335) COMPHIBRON THREE
(55269) COMPHIBRON FIVE
(55281) COMPHIBRON SEVEN
(00510) COMNAVSOUTH-COM15
(99909) USSOUTHCOM
(99910) CINCEASTLANT
(00061) CINCUSNAVEUR
(57006) COMNAVFORJAPAN
(62894) COMNAVFORKOREA
```

```
(31585) CINC UNC-USF KOREA
(57014) COMICEDEFOR
(63842) COMANTDC
(62822) COMUSTDC
(62982) USMAC JUSMAG THAI
(08961) COMSECONDFLT
(57087) COMTHIRDFLT
(57042) COMSIXTHFLT
(57024) COMSEVENTHFLT
(99911) CINCAL
(00038) CINCPAC
(00070) CINCPACFLT
(00066) CINCLANT
(00060) CINCLANTFLT
(63420) NIPSSA
(63415) DIA
(99912) FICEUR
(63186) FICPAC
(99913) FICEURLANT
(68166) NISC
(65134) PACOMELINTCEN
(65792) LANTCOMELINTCEN
(66400) NIPSTRAFAC
(99914) CTF 168
(99915) CTG 168.1
(99916) CTG 168.2
(99917) CTG 168.3
(99918) FITCLANT
(99919) FITCPAC
(00015) COMNAVINTCOM
(62930) NFOIO
(63285) NISHQ
(63051) NISO CHASN
(65493) NISO EUROPE
(99920) NISO JAPAN
(99921) NISO MARIANAS
(63053) NISO NEW ORLEANS
(63054) NISO NEW YORK
(63055) NISO NORFOLK
(63064) NISO HAWAII
(63057) NISO SAN DIEGO
(63058) NISO SAN FRANCISCO
(99922) COMCRUDESGRU EIGHT
(99923) COMCRUDESGRU TWELVE
(31695) NAVCOSSACT
(99924) FASOTRAGRULANT BRUNS
(96013) CNA
(99925) COMFLTCORGRU TWO
```

```
        (62919) COMCARIBSEAFRON
        (62928) COMEASTSEAFRON
        (99926) COMSUBGRU FIVE
        (99927) COMSUBGRU SEVEN
        (99928) COMSUBGRU EIGHT
        (57016) COMSUBLANT
        (57020) COMSUBPAC
        (99929) COMAEWWINGPAC
        (99930) COMRECONATKWING ONE
        (99931) VC ONE
        (09930) VQ ONE
        (09946) VQ TWO
        (09519) COMATWING ONE
        (99932) PHIBSCOL CORONADO
        (99933) IPAC
        (99934) NRRF KAMISEYA CTF72
        (99935) COMUSNAVPHIL-CTF 72
        (99936) CNO OP-96
        (99937) NFOIO FRIENDSHIP ANNEX
        (99938) DIA POMPONIO PLAZA
        (99939) DIA ANACOSTIA ANNEX
        (99940) DIA ARLINGTON HALL STATION
        (99941) DIA WASH NAVY YARD ANNEX
        (99942) DIA NSA ANNEX
        (99943) DIA ANMCC ANNEX
        (99944) DIA NEACP
        (99945) DIA CANADIAN DEF HQ
        (99946) DIA NATL MIL INTELL CENTER/
VAR005  (0) CONUS
        (1) EUROPE
        (2) PACIFIC
        (3) ATLANTIC-MED AFLOAT
        (4) PACIFIC AFLOAT/
VAR006  ('AF') AFLOAT COMMANDS
        ('AK') ALASKA
        ('AZ') AZORES
        ('CA') CALIFORNIA
        ('CN') NATIONALIST CHINA
        ('CZ') PANAMA CANAL ZONE
        ('DC') WASHINGTON DC
        ('FL') FLORIDA
        ('GM') GUAM
        ('GT') GUANTANAMO
        ('HI') HAWAII
        ('IC') ICELAND
        ('IT') ITALY
        ('JP') JAPAN
        ('KO') KOREA
```

```
                  ('LA') LOUISIANA
                  ('MA') MARIANAS
                  ('MD') MARYLAND
                  ('ME') MAINE
                  ('NB') NEBRASKA
                  ('NY') NEW YORK
                  ('PA') PENNSYLVANIA
                  ('PI') PHILIPPINE ISLANDS
                  ('PR') PUERTO RICO
                  ('SC') SOUTH CAROLINA
                  ('SP') SPAIN
                  ('TH') THAILAND
                  ('UK') UNITED KINGDOM
                  ('VA') VIRGINIA/
          VAR007  (1) LCDR MOUNT
                  (2) LT FOSTER
                  (3) LT BICKELL
                  (4) LT HUBER
                  (5) LT WATSON/
          VAR011  (1) CIVILIAN
                  (3) LIEUTENANT
                  (4) LCDR
                  (5) CDR
                  (6) CAPT/
          VAR018  (0) LESS THAN BACHELORS DEGREE
                  (1) BACHELORS LEVEL
                  (2) POSTGRADUATE STUDIES
                  (4) MASTERS LEVEL
                  (5) DOCTORAL LEVEL/
          VAR020  (0) NOT FIRST
                  (1) FIRST/
          VAR026,VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,
          VAR042,VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,
          VAR058  (0) NOT VALID
                  (1) VALID/
          VAR084  (0) NO COMMENTS
                  (1) NO FURTHER COMMENTS
                  (2) ADDITIONAL COMMENTS/
          VAR087  TO VAR132,VAR137 TO VAR182
                  (1) NOT NEEDED
                  (2) BASIC KNOWLEDGE
                  (3) WORKING KNOWLEDGE
                  (4) EXPERT LEVEL/
PRINT FORMATS  VAR001,VAR003,VAR006,VAR010,VAR016,VAR017,VAR019,VAR061,
          VAR062,VAR064,VAR065,VAR069,VAR070,VAR072,VAR073,VAR077,
          VAR078,VAR083 (A)
          VAR002,VAR004,VAR005,VAR007 TO VAR009,VAR011 TO VAR015,
          VAR018,VAR020 TO VAR060,VAR062,VAR063,VAR065 TO VAR068,VAR070,
```

```
                 VAR071,VAR073 TO VAR076,VAR078 TO VAR082,VAR084 TO VAR186 (0)
CONDESCRIPTIVE  VAR011, VAR012, VAR018, VAR020 TO VAR022, VAR025 TO VAR058,
                 VAR063, VAR066, VAR071, VAR074, VAR079, VAR080 TO VAR186
STATISTICS       ALL
READ INPUT DATA
SAVE FILE
FINISH
```

APPENDIX F

SAMPLE L

ALGOL SOURCE PROGRAM TO MERGE QICARDS AND D1CARDS FILES

```
//HUBER08X JOB (2600,0678,YS42),'HUBER,E.W.',TIME=4
// EXEC ALGWCLG,PARM.GO='SIZE=150K',REGION.GO=230K
//ALGOL.SYSIN DD *
%ALGOL
BEGIN
INTEGER QICASENUMBER, DCASENUMBER;
STRING (80) BUFFER1, BUFFER2, BUFFER3;

PROCEDURE REWINDQICARDS; FORTRAN "RWND11";

PROCEDURE REWINDFILE12; FORTRAN "RWND12";

PROCEDURE REWINDDCARDS;
   BEGIN
   REWINDFILE12;
   DCASENUMBER := 0;
   END;

PROCEDURE GETQICARD (STRING (80) RESULT BUF); FORTRAN "READ11";

PROCEDURE PUTQIDCARD (STRING (80) VALUE BUF); FORTRAN "RITE14";

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

PROCEDURE GETPUTCASE;
   FOR X := 1 UNTIL 9 DO
      BEGIN
      GETQICARD (BUFFER1);
      PUTQIDCARD (BUFFER1);
      IF X = 1 THEN QICASENUMBER := CONVERT (BUFFER1(76|3));
      IF X = 1 THEN BUFFER3(76|3) := BUFFER1(76|3);
      END;

PROCEDURE PUTDCARDOUT;
   BEGIN
   IF QICASENUMBER < DCASENUMBER THEN REWINDDCARDS;
   WHILE QICASENUMBER > DCASENUMBER DO READDCARD (BUFFER2);
   IF QICASENUMBER = DCASENUMBER THEN PUTQIDCARD (BUFFER2) ELSE
      PUTQIDCARD (BUFFER3);
   END;
```

```
PROCEDURE READDCARD (STRING (80) RESULT BUF);
   BEGIN
   PROCEDURE READDIMAGE (STRING (80) RESULT BUFX); FORTRAN "READ12";
   READDIMAGE (BUF);
   DCASENUMBER := CONVERT(BUF(76|3));
   END;

PROCEDURE INITIALIZE;
   BEGIN
   REWINDQICARDS;
   REWINDDCARDS;
   QICASENUMBER := 0;
   BUFFER3 := " ";
   FOR X := 0 UNTIL 59 DO BUFFER3(X|1) := "9";
   BUFFER3(71|5) := "00003";
   BUFFER3(79|1) := "8";
   END;

WRITE ("START RUN");
INITIALIZE;
FOR X := 1 UNTIL 325 DO
   BEGIN
   GETPUTCASE;
   PUTDCARDOUT;
   WRITE (QICASENUMBER);
   END;
WRITE ("END RUN");
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//               DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//               DD DISP=SHR,DSN=SYS1.FORTLIB
//LINK.SYSPRINT DD DUMMY
//LINK.SYSIN    DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.FDALG3,
//               DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),SPACE=(CYL,(5,1)),
//               DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT11F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QICARDS,
//  DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),SPACE=(CYL,(25,2)),
//  DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT12F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.DICARDS,
//  DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(25,2)),
//  DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT14F001 DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QIDICDS,
//  DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),SPACE=(CYL,(25,2),RLSE),
//  DISP=(NEW,KEEP),LABEL=RETPD=30
//GO.FT07F001 DD DUMMY
//GO.SYSIN   DD *
```

APPENDIX F

SAMPLE M

INTELLC SOURCE DECK SPSS PROGRAM

```
//HUBER3 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=1
// EXEC SPSS,REGION=250K
//FT04F001 DD DSNAME=S2600.INTELLC,UNIT=2311,VOL=SER=SYS003,
// DISP=(NEW,KEEP),DCB=BLKSIZE=3624,LABEL=EXPDT=75100,
// SPACE=(CYL,(3,1))
//FT08F001    DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QID1CDS,
//  DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),DISP=SHR,LABEL=(,,,IN)
//SYSIN DD *
FILE NAME       INTELLC  QUESTIONNAIRE INTERVIEW DELPHIA FILE
RUN NAME        YS-42 T.A. GROUP QUESTIONNAIRE INTERVIEW DELPHI A FILE
VARIABLE LIST   VAR001 TO VAR212
# OF CASES      325
INPUT MEDIUM    DISK
INPUT FORMAT    FIXED (A25,F5.0,A37,F5.0,F1.0,A2,F1.0,F3.0,F1.0/
                A40,F1.0,F2.0,3F4.0,2A5,F1.0,A5,F1.0,2F2.0,F3.0,F1.0/
                17(F3.0,F1.0),8X,F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,2F3.0,35X,F3.0,F1.0/
                A75,F1.0,F3.0,F1.0/
                46F1.0,27X,F1.0,F2.0,F3.0,F1.0/
                46F1.0,27X,F1.0,F2.0,F3.0,F1.0/
                20F3.0,11X,3F1.0,F2.0,F3.0,F1.0)
MISSING VALUES  VAR005,VAR007,VAR009,VAR011,VAR018,VAR020,VAR024,VAR026,
                VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,VAR042,
                VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,VAR058,
                VAR060,VAR068,VAR076,VAR082,VAR084,VAR086 TO VAR132,
                VAR137 TO VAR182 (9)/
                VAR012,VAR021,VAR022 (99)/
                VAR008,VAR023,VAR025,VAR027,VAR029,VAR031,VAR033,VAR035,
                VAR037,VAR039,VAR041,VAR043,VAR045,VAR047,VAR049,VAR051,
                VAR053,VAR055,VAR057,VAR059,VAR063,VAR066,VAR067,VAR071,
                VAR074,VAR075,VAR079,VAR080,VAR081,VAR085,
                VAR187 TO VAR206 (999)/
                VAR062,VAR065,VAR070,VAR073,VAR078 ('    ')/
                VAR013 TO VAR015 (9999)/
                VAR002,VAR004,VAR019 (99999)/
                VAR061,VAR064,VAR069,VAR072,VAR077
                ('                                        ')
VAR LABELS      VAR001,COMMAND NAME/
                VAR002,BILLET SEQUENCE CODE/
                VAR003,BILLET TITLE/
                VAR004,UNIT IDENTIFICATION CODE/
                VAR005,CONUS-OVERSEAS/
                VAR006,COUNTRY-STATE CODE/
                VAR007,CODER CODE/
                VAR008,CARD #1 SEQUENCE/
                VAR009,CARD ONE NUMBER/
```

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VAR010,RESPONDENTS NAME/
VAR011,RESPONDENTS RANK/
VAR012,RESPONDENTS AGE/
VAR013,RESPONDENTS DESIGNATOR/
VAR014,RESPONDENTS PREVIOUS DESIGNATOR/
VAR015,RESPONDENTS FIRST DESIGNATOR/
VAR016,BILLET SUBSPECIALTY CODE/
VAR017,RESPONDENTS SUBSPECIALTY CODE/
VAR018,EDUCATIONAL LEVEL/
VAR019,TRAINING USED IN THIS BILLET/
VAR020,FIRST INTELL BILLET, NO-YES/
VAR021,YEARS PREVIOUS INTELL EXPERIENCE/
VAR022,MONTHS IN THIS BILLET/
VAR023,CARD #2 SEQUENCE/
VAR024,CARD TWO NUMBER/
VAR025,% INTELL OFFICE ADMIN/
VAR026,VALID INTELL OFFICE ADMIN/
VAR027,% BRIEFS AND DEBRIEFS/
VAR028,VALID BRIEFS AND DEBRIEFS/
VAR029,% BUDGETS AND BUDGETING/
VAR030,VALID BUDGETS AND BUDGETING/
VAR031,% CHARTS AND AUDIO-VISUAL AIDS/
VAR032,VALID CHARTS AND AUDIO-VISUAL AIDS/
VAR033,% COUNTERINTELLIGENCE STUDIES/
VAR034,VALID COUNTERINTELLIGENCE STUDIES/
VAR035,% DATA ANALYSIS/
VAR036,VALID DATA ANALYSIS/
VAR037,% DECISIONS AND RECOMMENDATIONS/
VAR038,VALID DECISIONS AND RECOMMENDATIONS/
VAR039,% ESTIMATES/
VAR040,VALID ESTIMATES/
VAR041,% INTELL ANNEXES TO OPORDS/
VAR042,VALID INTELL ANNEXES TO OPORDS/
VAR043,% INTELL COLLECTION PLANS/
VAR044,VALID INTELL COLLECTION PLANS/
VAR045,% INTELL COLLECTION TASKING/
VAR046,VALID INTELL COLLECTION TASKING/
VAR047,% INTELLIGENCE REPORTS/
VAR048,VALID INTELLIGENCE REPORTS/
VAR049,% INTELLIGENCE STUDIES/
VAR050,VALID INTELLIGENCE STUDIES/
VAR051,% INTERFACE ADP-TELECOMMS/
VAR052,VALID INTERFACE ADP-TELECOMMS/
VAR053,% ORDERS OF BATTLE/
VAR054,VALID ORDERS OF BATTLE/
VAR055,% PHYSICAL SECURITY/
VAR056,VALID PHYSICAL SECURITY/
VAR057,% TACTICAL PLOTS/
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VAR058,VALID TACTICAL PLOTS/
VAR059,CARD #3 SEQUENCE/
VAR060,CARD THREE NUMBER/
VAR061,FIRST INTELL OUTPUT ADDED/
VAR062,CODED FIRST ADDITIONAL OUTPUT/
VAR063,% FIRST INTELL OUTPUT ADDED/
VAR064,SECOND INTELL OUTPUT ADDED/
VAR065,CODED SECOND ADDITIONAL OUTPUT/
VAR066,% SECOND INTELL OUTPUT ADDED/
VAR067,CARD #4 SEQUENCE/
VAR068,CARD FOUR NUMBER/
VAR069,THIRD INTELL OUTPUT ADDED/
VAR070,CODED THIRD ADDITIONAL OUTPUT/
VAR071,% THIRD INTELL OUTPUT ADDED/
VAR072,FOURTH INTELL OUTPUT ADDED/
VAR073,CODED FOURTH ADDITIONAL OUTPUT/
VAR074,% FOURTH INTELL OUTPUT ADDED/
VAR075,CARD #5 SEQUENCE/
VAR076,CARD FIVE NUMBER/
VAR077,FIFTH INTELL OUTPUT ADDED/
VAR078,CODED FIFTH ADDITIONAL OUTPUT/
VAR079,% FIFTH INTELL OUTPUT ADDED/
VAR080,% NON-INTELLIGENCE OUTPUTS/
VAR081,CARD #6 SEQUENCE/
VAR082,CARD SIX NUMBER/
VAR083,RESPONDENTS COMMENTS/
VAR084,ARE COMMENTS CONTINUED?/
VAR085,CARD #7 SEQUENCE/
VAR086,CARD SEVEN NUMBER/
VAR087,U-COLLEGE ALGEBRA/
VAR088,U-BEGIN CALCULUS/
VAR089,U-PROBS & STATS/
VAR090,U-ADV. CALCULUS/
VAR091,U-FOREIGN LANGUAGE/
VAR092,U-USSR/
VAR093,U-CHINA/
VAR094,U-MID EAST/
VAR095,U-EUROPE/
VAR096,U-LATIN AMERICA/
VAR097,U-AFRICA/
VAR098,U-OPS ANALYSIS/
VAR099,U-INT'L RELATIONS/
VAR100,U-UW ACOUSTICS/
VAR101,U-SONAR SYSTEMS/
VAR102,U-COMM SYSTEMS/
VAR103,U-RADAR SYSTEMS/
VAR104,U-OPTICS/
VAR105,U-LASERS/
```

```
VAR106,U-COLLECTION SYSTEMS/
VAR107,U-NAT'L & NAV BUDGET PROC/
VAR108,U-THREAT & NET ASSESSMENT/
VAR109,U-NATIONAL SEC & INTELL ORGN/
VAR110,U-SOVIET NAVAL/
VAR111,U-SOVIET AIR FORCE/
VAR112,U-SOVIET GROUND/
VAR113,U-SOVIET PVO/
VAR114,U-SOVIET STRAT ROCKET TROOPS/
VAR115,U-SOVIET-MER-FISH-OCEANO/
VAR116,U-COLLECTION SYSTEMS/
VAR117,U-NAVAL STRAT-GENL PURPOSE/
VAR118,U-OTHER STRAT-GENL PURPOSE/
VAR119,U-ALLIED CAPABILITY/
VAR120,U-SYS DESIGN-ANAL-MGMT/
VAR121,U-HARDWARE OPER/
VAR122,U-SOFTWARE-PROGRAMMING/
VAR123,U-BASIC INTERFACE OPS/
VAR124,U-BRIEFING/
VAR125,U-WRITING/
VAR126,U-ORGANIZ OF THOUGHT/
VAR127,U-COLLECTION SYSTEMS/
VAR128,U-PERT/
VAR129,U-MGMT BY OBJECTIVES/
VAR130,U-PERSONNEL MGMT/
VAR131,U-FINANCIAL MGMT/
VAR132,U-LABOR RELATIONS/
VAR133,INTERVIEW CODER NUMBER/
VAR134,CARD #8 SUBCARD NUMBER/
VAR135,CARD #801 SEQUENCE/
VAR136,CARD #801 NUMBER/
VAR137,N-COLLEGE ALGEBRA/
VAR138,N-BEGIN CALCULUS/
VAR139,N-PROBS & STATS/
VAR140,N-ADV. CALCULUS/
VAR141,N-FOREIGN LANGUAGE/
VAR142,N-USSR/
VAR143,N-CHINA/
VAR144,N-MID EAST/
VAR145,N-EUROPE/
VAR146,N-LATIN AMERICA/
VAR147,N-AFRICA/
VAR148,N-OPS ANALYSIS/
VAR149,N-INT'L RELATIONS/
VAR150,N-UW ACOUSTICS/
VAR151,N-SONAR SYSTEMS/
VAR152,N-COMM SYSTEMS/
VAR153,N-RADAR SYSTEMS/
```

```
VAR154,N-OPTICS/
VAR155,N-LASERS/
VAR156,N-COLLECTION SYSTEMS/
VAR157,N-NAT'L & NAV BUDGET PROC/
VAR158,N-THREAT & NET ASSESSMENT/
VAR159,N-NATIONAL SEC & INTELL ORGN/
VAR160,N-SOVIET NAVAL/
VAR161,N-SOVIET AIR FORCE/
VAR162,N-SOVIET GROUND/
VAR163,N-SOVIET PVO/
VAR164,N-SOVIET STRAT ROCKET TROOPS/
VAR165,N-SOVIET-MER-FISH-OCEANO/
VAR166,N-COLLECTION SYSTEMS/
VAR167,N-NAVAL STRAT-GENL PURPOSE/
VAR168,N-OTHER STRAT-GENL PURPOSE/
VAR169,N-ALLIED CAPABILITY/
VAR170,N-SYS DESIGN-ANAL-MGMT/
VAR171,N-HARDWARE OPER/
VAR172,N-SOFTWARE-PROGRAMMING/
VAR173,N-BASIC INTERFACE OPS/
VAR174,N-BRIEFING/
VAR175,N-WRITING/
VAR176,N-ORGANIZ OF THOUGHT/
VAR177,N-COLLECTION SYSTEMS/
VAR178,N-PERT/
VAR179,N-MGMT BY OBJECTIVES/
VAR180,N-PERSONNEL MGMT/
VAR181,N-FINANCIAL MGMT/
VAR182,N-LABOR RELATIONS/
VAR183,INTERVIEW CODER NUMBER/
VAR184,CARD #8 SUBCARD NUMBER/
VAR185,CARD #802 SEQUENCE/
VAR186,CARD #802 NUMBER/
VAR187,D1-OFFICE ADMIN/
VAR188,D1-RESOURCE-ORGN MGMT/
VAR189,D1-BUDGET & FISCAL PLANS/
VAR190,D1-DECISIONS & RECOMMENDATIONS/
VAR191,D1-BRIEFS & DEBRIEFS/
VAR192,D1-LIAISON/
VAR193,D1-CHARTS & AUDIO-VISUAL AIDS/
VAR194,D1-COUNTERINTELLIGENCE STUDIES/
VAR195,D1-DATA ANALYSIS/
VAR196,D1-ESTIMATES/
VAR197,D1-INTELL ANNEXES TO OPORDS/
VAR198,D1-INTELL COLLECTION PLANS/
VAR199,D1-INTELL COLLECTION TASKING/
VAR200,D1-INTELL INFO REPORTS/
VAR201,D1-ADP & TELECOMMS INTERFACE/
```

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                VAR202,D1-ORDERS OF BATTLE/
                VAR203,D1-PHYSICAL SECURITY/
                VAR204,D1-TACTICAL PLOTS/
                VAR205,D1-NON-INTELL RELATED OUTPUTS/
                VAR206,D1-COUNSELING & TRAINING/
                VAR207,D1-SPECIAL CASE FLAG/
                VAR208,D1-DIS QUESTION/
                VAR209,D1-IS THIS VALID DELPHI RESPONSE/
                VAR210,D1-CARD #8 SUBCARD NUMBER/
                VAR211,D1-CARD #803 SEQUENCE/
                VAR212,D1-CARD #803 NUMBER
COMMENT         THE FOLLOWING UNIT IDENTIFICATION CODES LISTED FOR
                VAR004 ARE VALID UIC'S UNLESS THE NUMBER BEGINS WITH 999XX.
COMMENT         SEQUENCE NUMBERS, VARS 008, 023, 059, 067, 075, 081, AND 085,
                ARE KEYED IN THE FOLLOWING MANNER:
                LCDR MOUNT HAS 001 THROUGH 199
                LT FOSTER HAS 200 THROUGH 399
                LT BICKELL HAS 400 THROUGH 599
                LT HUBER HAS 600 THROUGH 799
                LT WATSON HAS 800 THROUGH 999
VALUE LABELS    VAR004 (03360) USS SARATOGA
                       (03362) USS INDEPENDENCE
                       (03363) USS KITTY HAWK
                       (03321) USS HANCOCK
                       (03334) USS ORISKANY
                       (03341) USS MIDWAY
                       (03342) USS F D ROOSEVELT
                       (03343) USS CORAL SEA
                       (03359) USS FORRESTAL
                       (03361) USS RANGER
                       (03364) USS CONSTELLATION
                       (03366) USS AMERICA
                       (03367) USS KENNEDY
                       (03365) USS ENTERPRISE
                       (05840) USS BLUE RIDGE
                       (20001) USS MOUNT WHITNEY
                       (62856) NAF LAJES
                       (60200) NAS CECIL FIELD
                       (00213) NAS KEY WEST
                       (57007) COMIDEASTFOR
                       (00309) NB GUANTANAMO
                       (62769) NB SUBIC
                       (64591) JSTPS
                       (99901) COMCARGRU ONE
                       (99902) COMCARGRU TWO
                       (99903) COMCARGRU THREE
                       (99904) COMCARGRU FOUR
                       (99905) COMCARGRU FIVE
```

```
(99906) COMCARGRU SIX
(99907) COMCARGRU SEVEN
(63126) MISSILE CENTER PT MUGU
(30883) NOSIC
(66967) FOSIC NORFOLK
(66842) FOSIC LONDON
(66600) FOSIF ROTA
(66970) FOSIF WESTPAC
(63013) NUWEPNTRAGRUPAC
(57012) COMNAVAIRLANT
(57025) COMNAVAIRPAC
(09550) COMFAIRMED
(09117) COMFAIRKEF
(99908) COMPATWING ONE
(63981) COMPATWINGSLANT
(05917) COMPATWINGSPAC
(57015) COMPHIBLANT
(57019) COMPHIBPAC
(55297) COMPHIBRON ONE
(55335) COMPHIBRON THREE
(55269) COMPHIBRON FIVE
(55281) COMPHIBRON SEVEN
(00510) COMNAVSOUTH-COM15
(99909) USSOUTHCOM
(99910) CINCEASTLANT
(00061) CINCUSNAVEUR
(57006) COMNAVFORJAPAN
(62894) COMNAVFORKOREA
(31585) CINC UNC-USF KOREA
(57014) COMICEDEFOR
(63842) COMANTDC
(62822) COMUSTDC
(62982) USMAC JUSMAG THAI
(08961) COMSECONDFLT
(57087) COMTHIRDFLT
(57042) COMSIXTHFLT
(57024) COMSEVENTHFLT
(99911) CINCAL
(00038) CINCPAC
(00070) CINCPACFLT
(00066) CINCLANT
(00060) CINCLANTFLT
(63420) NIPSSA
(63415) DIA
(99912) FICEUR
(63186) FICPAC
(99913) FICEURLANT
(68166) NISC
```

(65134) PACOMELINTCEN
(65792) LANTCOMELINTCEN
(66400) NIPSTRAFAC
(99914) CTF 168
(99915) CTG 168.1
(99916) CTG 168.2
(99917) CTG 168.3
(99918) FITCLANT
(99919) FITCPAC
(00015) COMNAVINTCOM
(62930) NFOIO
(63285) NISHQ
(63051) NISO CHASN
(65493) NISO EUROPE
(99920) NISO JAPAN
(99921) NISO MARIANAS
(63053) NISO NEW ORLEANS
(63054) NISO NEW YORK
(63055) NISO NORFOLK
(63064) NISO HAWAII
(63057) NISO SAN DIEGO
(63058) NISO SAN FRANCISCO
(99922) COMCRUDESGRU EIGHT
(99923) COMCRUDESGRU TWELVE
(31695) NAVCOSSACT
(99924) FASOTRAGRULANT BRUNS
(96013) CNA
(99925) COMFLTCORGRU TWO
(62919) COMCARIBSEAFRON
(62928) COMEASTSEAFRON
(99926) COMSUBGRU FIVE
(99927) COMSUBGRU SEVEN
(99928) COMSUBGRU EIGHT
(57016) COMSUBLANT
(57020) COMSUBPAC
(99929) COMAEWWINGPAC
(99930) COMRECONATKWING ONE
(99931) VC ONE
(09930) VQ ONE
(09946) VQ TWO
(09519) COMATWING ONE
(99932) PHIBSCOL CORONADO
(99933) IPAC
(99934) NRRF KAMISEYA CTF72
(99935) COMUSNAVPHIL-CTF 72
(99936) CNO OP-96
(99937) NFOIO FRIENDSHIP ANNEX
(99938) DIA POMPONIO PLAZA

```
        (99939) DIA ANACOSTIA ANNEX
        (99940) DIA ARLINGTON HALL STATION
        (99941) DIA WASH NAVY YARD ANNEX
        (99942) DIA NSA ANNEX
        (99943) DIA ANMCC ANNEX
        (99944) DIA NEACP
        (99945) DIA CANADIAN DEF HQ
        (99946) DIA NATL MIL INTELL CENTER/
VAR005  (0) CONUS
        (1) EUROPE
        (2) PACIFIC
        (3) ATLANTIC-MED AFLOAT
        (4) PACIFIC AFLOAT/
VAR006  ('AF') AFLOAT COMMANDS
        ('AK') ALASKA
        ('AZ') AZORES
        ('CA') CALIFORNIA
        ('CN') NATIONALIST CHINA
        ('CZ') PANAMA CANAL ZONE
        ('DC') WASHINGTON DC
        ('FL') FLORIDA
        ('GM') GUAM
        ('GT') GUANTANAMO
        ('HI') HAWAII
        ('IC') ICELAND
        ('IT') ITALY
        ('JP') JAPAN
        ('KO') KOREA
        ('LA') LOUISIANA
        ('MA') MARIANAS
        ('MD') MARYLAND
        ('ME') MAINE
        ('NB') NEBRASKA
        ('NY') NEW YORK
        ('PA') PENNSYLVANIA
        ('PI') PHILIPPINE ISLANDS
        ('PR') PUERTO RICO
        ('SC') SOUTH CAROLINA
        ('SP') SPAIN
        ('TH') THAILAND
        ('UK') UNITED KINGDOM
        ('VA') VIRGINIA/
VAR007  (1) LCDR MOUNT
        (2) LT FOSTER
        (3) LT BICKELL
        (4) LT HUBER
        (5) LT WATSON/
VAR011  (1) CIVILIAN
```

```
                  (3) LIEUTENANT
                  (4) LCDR
                  (5) CDR
                  (6) CAPT/
          VAR018  (0) LESS THAN BACHELORS DEGREE
                  (1) BACHELORS LEVEL
                  (2) POSTGRADUATE STUDIES
                  (4) MASTERS LEVEL
                  (5) DOCTORAL LEVEL/
          VAR020  (0) NOT FIRST
                  (1) FIRST/
          VAR026,VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,
          VAR042,VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,
          VAR058  (0) NOT VALID
                  (1) VALID/
          VAR084  (0) NO COMMENTS
                  (1) NO FURTHER COMMENTS
                  (2) ADDITIONAL COMMENTS/
          VAR087  TO VAR132,VAR137 TO VAR182
                  (1) NOT NEEDED
                  (2) BASIC KNOWLEDGE
                  (3) WORKING KNOWLEDGE
                  (4) EXPERT LEVEL/
          VAR207  (0) NOT SPECIAL CASE
                  (1) SPECIAL CASE/
          VAR208  (0) DIS QUESTION NOT ASKED
                  (1) DIS QUESTION NEGATIVE
                  (2) DIS QUESTION AFFIRMATIVE/
          VAR209  (0) DELPHI A NOT RECEIVED
                  (1) DELPHI A WAS RECEIVED/
PRINT FORMATS     VAR001,VAR003,VAR006,VAR010,VAR016,VAR017,VAR019,VAR061,
          VAR062,VAR064,VAR065,VAR069,VAR070,VAR072,VAR073,VAR077,
          VAR078,VAR083 (A)
          VAR002,VAR004,VAR005,VAR007 TO VAR009,VAR011 TO VAR015,
          VAR018,VAR020 TO VAR060,VAR062,VAR063,VAR065 TO VAR068,VAR070,
          VAR071,VAR073 TO VAR076,VAR078 TO VAR082,VAR084 TO VAR212 (0)
CONDESCRIPTIVE VAR187 TO VAR212
STATISTICS        ALL
READ INPUT DATA
SAVE FILE
FINISH
```

APPENDIX F

SAMPLE N

ALGOL SOURCE PROGRAM TO MERGE QID1CDS AND D2CARDS FILES

```
//HUBER09X JOB (2600,0678,YS42),'HUBER,E.W.',TIME=4
// EXEC ALGWCLG,PARM.GO='SIZE=150K',REGION.GO=230K
//ALGOL.SYSIN DD *
%ALGOL
BEGIN
INTEGER QID1CASENUMBER, D2CASENUMBER;
STRING (80) BUFFER1, BUFFER2, BUFFER3, D2BUFFER1, D2BUFFER2;

PROCEDURE REWINDQID1CARDS; FORTRAN "RWND11";

PROCEDURE REWINDFILE12; FORTRAN "RWND12";

PROCEDURE REWINDD2CARDS;
   BEGIN
   REWINDFILE12;
   D2CASENUMBER := 0;
   D2BUFFER1 := D2BUFFER2 := " ";
   END;

PROCEDURE GETQID1CARD (STRING (80) RESULT BUF); FORTRAN "READ11";

PROCEDURE READD2CARD (STRING (80) RESULT BUF); FORTRAN "READ12";

PROCEDURE PUTQIDCARD (STRING (80) VALUE BUF); FORTRAN "RITE14";

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

PROCEDURE GETPUTCASE;
   FOR X := 1 UNTIL 10 DO
      BEGIN
      GETQID1CARD(BUFFER1);
      PUTQIDCARD(BUFFER1);
      IF X = 1 THEN QID1CASENUMBER := CONVERT(BUFFER1(76|3));
      IF X = 1 THEN BUFFER2(76|3) := BUFFER3(76|3) := BUFFER1(76|3);
      END;

PROCEDURE PUTD2CARDOUT;
   BEGIN
   IF QID1CASENUMBER < D2CASENUMBER THEN REWINDD2CARDS;
   WHILE QID1CASENUMBER > D2CASENUMBER DO GETNEXTD2SET;
```

```
    IF QID1CASENUMBER = D2CASENUMBER THEN
       BEGIN
       PUTQIDCARD(D2BUFFER1);
       PUTQIDCARD(D2BUFFER2);
       IF (D2BUFFER1(74|2) ¬= "04") OR (D2BUFFER2(74|2) ¬= "05") OR
          (D2BUFFER1(79|1) ¬= "8") OR (D2BUFFER2(79|1) ¬= "8") THEN
          WRITEON (" INVALID CONTROL BLOCK");
       END
       ELSE
       BEGIN
       PUTQIDCARD(BUFFER2);
       PUTQIDCARD(BUFFER3)
       END;
    END;

PROCEDURE GETNEXTD2SET;
   BEGIN
   STRING (3) CARD1CASE, CARD2CASE;
   PROCEDURE ROLLIN (INTEGER VALUE QTY);
      FOR X := 1 UNTIL QTY DO IF D2BUFFER2(76|3) ¬= "999" THEN
         BEGIN
         D2BUFFER1 := D2BUFFER2;
         READD2CARD(D2BUFFER2);
         CARD1CASE := D2BUFFER1(76|3);
         CARD2CASE := D2BUFFER2(76|3);
         END;
   ROLLIN (2);
   WHILE (CARD1CASE ¬= CARD2CASE) AND (CARD2CASE ¬= "999") DO
      BEGIN
      WRITEON (" D2CARD MISSING ", CARD1CASE, " ", CARD2CASE);
      ROLLIN (1);
      END;
   D2CASENUMBER := CONVERT(D2BUFFER2(76|3));
   END;

PROCEDURE INITIALIZE;
   BEGIN
   REWINDQID1CARDS;
   REWINDD2CARDS;
   QID1CASENUMBER := 0;
   BUFFER2 := BUFFER3 := " ";
   FOR X := 0 UNTIL 59 DO BUFFER2(X|1) := "9";
   FOR X := 0 UNTIL 65 DO BUFFER3(X|1) := "9";
   BUFFER2(60|1) := "0";
   BUFFER2(73|3) := "004";
   BUFFER2(79|1) := BUFFER3(79|1) := "8";
   BUFFER3(73|3) := "005";
   END;
```

```
WRITE ("START RUN");
INITIALIZE;
FOR X := 1 UNTIL 325 DO
    BEGIN
    GETPUTCASE;
    PUTD2CARDOUT;
    WRITE (QIDICASENUMBER);
    END;
WRITE ("END RUN");
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//             DD DISP=SHR,DSN=SYS1.FORTLIB
//LINK.SYSPRINT DD DUMMY
//LINK.SYSIN   DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.FOALG3,
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),SPACE=(CYL,(5,1)),
//             DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT11F001  DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QID1CDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),SPACE=(CYL,(25,2)),
//   DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT12F001  DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.D2CARDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),SPACE=(CYL,(25,2)),
//   DISP=(OLD,KEEP),LABEL=(,,,IN)
//GO.FT14F001  DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QID12CDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),SPACE=(CYL,(25,2),RLSE),
//   DISP=(NEW,KEEP),LABEL=RETPD=30
//GO.FT07F001  DD DUMMY
//GO.SYSIN   DD *
```

APPENDIX F

SAMPLE O

INTELLD SOURCE DECK SPSS PROGRAM

```
//HUBER1 JOB (2600,0678,YS42),'HUBER,E.W.',TIME=1
// EXEC SPSS,REGION=250K
//FT04F001 DD DSNAME=S2600.INTELL,UNIT=2314,VOL=SER=MARY,
// DISP=(NEW,KEEP),DCB=BLKSIZE=3624,LABEL=EXPDT=75100,
// SPACE=(TRK,(140,5))
//FT08F001     DD UNIT=2311,VOL=SER=SYS003,DSN=S2600.QID12CDS,
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),DISP=SHR,LABEL=(,,,IN)
//SYSIN DD *
FILE NAME       INTELLD  QUEST-INTER-DEL A-DEL B COMBINED FILES
RUN NAME        YS-42 T.A. GROUP QUEST INTER DELPHI A DELPHI B FILE
VARIABLE LIST   VAR001 TO VAR347
# OF CASES      325
INPUT MEDIUM    DISK
INPUT FORMAT    FIXED (A25,F5.0,A37,F5.0,F1.0,A2,F1.0,F3.0,F1.0/
                A40,F1.0,F2.0,3F4.0,2A5,F1.0,A5,F1.0,2F2.0,F3.0,F1.0/
                17(F3.0,F1.0),8X,F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,F3.0,A32,A3,2F3.0,F1.0/
                A32,A3,2F3.0,35X,F3.0,F1.0/
                A75,F1.0,F3.0,F1.0/
                46F1.0,27X,F1.0,F2.0,F3.0,F1.0/
                46F1.0,27X,F1.0,F2.0,F3.0,F1.0/
                20F3.0,11X,3F1.0,F2.0,F3.0,F1.0/
                61F1.0,12X,F1.0,F2.0,F3.0,F1.0/
                66F1.0,7X,F1.0,F2.0,F3.0,F1.0)
MISSING VALUES  VAR005,VAR007,VAR009,VAR011,VAR018,VAR020,VAR024,VAR026,
                VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,VAR042,
                VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,VAR058,
                VAR060,VAR068,VAR076,VAR082,VAR084,VAR086 TO VAR132,
                VAR137 TO VAR182,VAR213 TO VAR272,VAR278 TO VAR343 (9)/
                VAR012,VAR021,VAR022 (99)/
                VAR003,VAR023,VAR025,VAR027,VAR029,VAR031,VAR033,VAR035,
                VAR037,VAR039,VAR041,VAR043,VAR045,VAR047,VAR049,VAR051,
                VAR053,VAR055,VAR057,VAR059,VAR063,VAR066,VAR067,VAR071,
                VAR074,VAR075,VAR079,VAR080,VAR081,VAR085,
                VAR187 TO VAR206 (999)/
                VAR062,VAR065,VAR070,VAR073,VAR078 ('    ')/
                VAR013 TO VAR015 (9999)/
                VAR002,VAR004 (99999)/
                VAR061,VAR064,VAR069,VAR072,VAR077
                ('                                   ')
VAR LABELS      VAR001,COMMAND NAME/
                VAR002,BILLET SEQUENCE CODE/
                VAR003,BILLET TITLE/
                VAR004,UNIT IDENTIFICATION CODE/
                VAR005,CONUS-OVERSEAS/
                VAR006,COUNTRY-STATE CODE/
                VAR007,CODER CODE/
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VAR008,CARD #1 SEQUENCE/
VAR009,CARD ONE NUMBER/
VAR010,RESPONDENTS NAME/
VAR011,RESPONDENTS RANK/
VAR012,RESPONDENTS AGE/
VAR013,RESPONDENTS DESIGNATOR/
VAR014,RESPONDENTS PREVIOUS DESIGNATOR/
VAR015,RESPONDENTS FIRST DESIGNATOR/
VAR016,BILLET SUBSPECIALTY CODE/
VAR017,RESPONDENTS SUBSPECIALTY CODE/
VAR018,EDUCATIONAL LEVEL/
VAR019,TRAINING USED IN THIS BILLET/
VAR020,FIRST INTELL BILLET, NO-YES/
VAR021,YEARS PREVIOUS INTELL EXPERIENCE/
VAR022,MONTHS IN THIS BILLET/
VAR023,CARD #2 SEQUENCE/
VAR024,CARD TWO NUMBER/
VAR025,% INTELL OFFICE ADMIN/
VAR026,VALID INTELL OFFICE ADMIN/
VAR027,% BRIEFS AND DEBRIEFS/
VAR028,VALID BRIEFS AND DEBRIEFS/
VAR029,% BUDGETS AND BUDGETING/
VAR030,VALID BUDGETS AND BUDGETING/
VAR031,% CHARTS AND AUDIO-VISUAL AIDS/
VAR032,VALID CHARTS AND AUDIO-VISUAL AIDS/
VAR033,% COUNTERINTELLIGENCE STUDIES/
VAR034,VALID COUNTERINTELLIGENCE STUDIES/
VAR035,% DATA ANALYSIS/
VAR036,VALID DATA ANALYSIS/
VAR037,% DECISIONS AND RECOMMENDATIONS/
VAR038,VALID DECISIONS AND RECOMMENDATIONS/
VAR039,% ESTIMATES/
VAR040,VALID ESTIMATES/
VAR041,% INTELL ANNEXES TO OPORDS/
VAR042,VALID INTELL ANNEXES TO OPORDS/
VAR043,% INTELL COLLECTION PLANS/
VAR044,VALID INTELL COLLECTION PLANS/
VAR045,% INTELL COLLECTION TASKING/
VAR046,VALID INTELL COLLECTION TASKING/
VAR047,% INTELLIGENCE REPORTS/
VAR048,VALID INTELLIGENCE REPORTS/
VAR049,% INTELLIGENCE STUDIES/
VAR050,VALID INTELLIGENCE STUDIES/
VAR051,% INTERFACE ADP-TELECOMMS/
VAR052,VALID INTERFACE ADP-TELECOMMS/
VAR053,% ORDERS OF BATTLE/
VAR054,VALID ORDERS OF BATTLE/
VAR055,% PHYSICAL SECURITY/
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VAR056,VALID PHYSICAL SECURITY/
VAR057,% TACTICAL PLOTS/
VAR058,VALID TACTICAL PLOTS/
VAR059,CARD #3 SEQUENCE/
VAR060,CARD THREE NUMBER/
VAR061,FIRST INTELL OUTPUT ADDED/
VAR062,CODED FIRST ADDITIONAL OUTPUT/
VAR063,% FIRST INTELL OUTPUT ADDED/
VAR064,SECOND INTELL OUTPUT ADDED/
VAR065,CODED SECOND ADDITIONAL OUTPUT/
VAR066,% SECOND INTELL OUTPUT ADDED/
VAR067,CARD #4 SEQUENCE/
VAR068,CARD FOUR NUMBER/
VAR069,THIRD INTELL OUTPUT ADDED/
VAR070,CODED THIRD ADDITIONAL OUTPUT/
VAR071,% THIRD INTELL OUTPUT ADDED/
VAR072,FOURTH INTELL OUTPUT ADDED/
VAR073,CODED FOURTH ADDITIONAL OUTPUT/
VAR074,% FOURTH INTELL OUTPUT ADDED/
VAR075,CARD #5 SEQUENCE/
VAR076,CARD FIVE NUMBER/
VAR077,FIFTH INTELL OUTPUT ADDED/
VAR078,CODED FIFTH ADDITIONAL OUTPUT/
VAR079,% FIFTH INTELL OUTPUT ADDED/
VAR080,% NON-INTELLIGENCE OUTPUTS/
VAR081,CARD #6 SEQUENCE/
VAR082,CARD SIX NUMBER/
VAR083,RESPONDENTS COMMENTS/
VAR084,ARE COMMENTS CONTINUED?/
VAR085,CARD #7 SEQUENCE/
VAR086,CARD SEVEN NUMBER/
VAR087,U-COLLEGE ALGEBRA/
VAR088,U-BEGIN CALCULUS/
VAR089,U-PROBS & STATS/
VAR090,U-ADV. CALCULUS/
VAR091,U-FOREIGN LANGUAGE/
VAR092,U-USSR/
VAR093,U-CHINA/
VAR094,U-MID EAST/
VAR095,U-EUROPE/
VAR096,U-LATIN AMERICA/
VAR097,U-AFRICA/
VAR098,U-OPS ANALYSIS/
VAR099,U-INT'L RELATIONS/
VAR100,U-UW ACOUSTICS/
VAR101,U-SONAR SYSTEMS/
VAR102,U-COMM SYSTEMS/
VAR103,U-RADAR SYSTEMS/
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VAR104,U-OPTICS/
VAR105,U-LASERS/
VAR106,U-COLLECTION SYSTEMS/
VAR107,U-NAT'L & NAV BUDGET PROC/
VAR108,U-THREAT & NET ASSESSMENT/
VAR109,U-NATIONAL SEC & INTELL ORGN/
VAR110,U-SOVIET NAVAL/
VAR111,U-SOVIET AIR FORCE/
VAR112,U-SOVIET GROUND/
VAR113,U-SOVIET PVO/
VAR114,U-SOVIET STRAT ROCKET TROOPS/
VAR115,U-SOVIET-MER-FISH-OCEANO/
VAR116,U-COLLECTION SYSTEMS/
VAR117,U-NAVAL STRAT-GENL PURPOSE/
VAR118,U-OTHER STRAT-GENL PURPOSE/
VAR119,U-ALLIED CAPABILITY/
VAR120,U-SYS DESIGN-ANAL-MGMT/
VAR121,U-HARDWARE OPER/
VAR122,U-SOFTWARE-PROGRAMMING/
VAR123,U-BASIC INTERFACE OPS/
VAR124,U-BRIEFING/
VAR125,U-WRITING/
VAR126,U-ORGANIZ OF THOUGHT/
VAR127,U-COLLECTION SYSTEMS/
VAR128,U-PERT/
VAR129,U-MGMT BY OBJECTIVES/
VAR130,U-PERSONNEL MGMT/
VAR131,U-FINANCIAL MGMT/
VAR132,U-LABOR RELATIONS/
VAR133,INTERVIEW CODER NUMBER/
VAR134,CARD #8 SUBCARD NUMBER/
VAR135,CARD #801 SEQUENCE/
VAR136,CARD #801 NUMBER/
VAR137,N-COLLEGE ALGEBRA/
VAR138,N-BEGIN CALCULUS/
VAR139,N-PROBS & STATS/
VAR140,N-ADV. CALCULUS/
VAR141,N-FOREIGN LANGUAGE/
VAR142,N-USSR/
VAR143,N-CHINA/
VAR144,N-MID EAST/
VAR145,N-EUROPE/
VAR146,N-LATIN AMERICA/
VAR147,N-AFRICA/
VAR148,N-OPS ANALYSIS/
VAR149,N-INT'L RELATIONS/
VAR150,N-UW ACOUSTICS/
VAR151,N-SONAR SYSTEMS/
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VAR152,N-COMM SYSTEMS/
VAR153,N-RADAR SYSTEMS/
VAR154,N-OPTICS/
VAR155,N-LASERS/
VAR156,N-COLLECTION SYSTEMS/
VAR157,N-NAT'L & NAV BUDGET PROC/
VAR158,N-THREAT & NET ASSESSMENT/
VAR159,N-NATIONAL SEC & INTELL ORGN/
VAR160,N-SOVIET NAVAL/
VAR161,N-SOVIET AIR FORCE/
VAR162,N-SOVIET GROUND/
VAR163,N-SOVIET PVO/
VAR164,N-SOVIET STRAT ROCKET TROOPS/
VAR165,N-SOVIET-MER-FISH-OCEANO/
VAR166,N-COLLECTION SYSTEMS/
VAR167,N-NAVAL STRAT-GENL PURPOSE/
VAR168,N-OTHER STRAT-GENL PURPOSE/
VAR169,N-ALLIED CAPABILITY/
VAR170,N-SYS DESIGN-ANAL-MGMT/
VAR171,N-HARDWARE OPER/
VAR172,N-SOFTWARE-PROGRAMMING/
VAR173,N-BASIC INTERFACE OPS/
VAR174,N-BRIEFING/
VAR175,N-WRITING/
VAR176,N-ORGANIZ OF THOUGHT/
VAR177,N-COLLECTION SYSTEMS/
VAR178,N-PERT/
VAR179,N-MGMT BY OBJECTIVES/
VAR180,N-PERSONNEL MGMT/
VAR181,N-FINANCIAL MGMT/
VAR182,N-LABOR RELATIONS/
VAR183,INTERVIEW CODER NUMBER/
VAR184,CARD #8 SUBCARD NUMBER/
VAR185,CARD #802 SEQUENCE/
VAR186,CARD #802 NUMBER/
VAR187,D1-OFFICE ADMIN/
VAR188,D1-RESOURCE-ORGN MGMT/
VAR189,D1-BUDGET & FISCAL PLANS/
VAR190,D1-DECISIONS & RECOMMENDATIONS/
VAR191,D1-BRIEFS & DEBRIEFS/
VAR192,D1-LIAISON/
VAR193,D1-CHARTS & AUDIO-VISUAL AIDS/
VAR194,D1-COUNTERINTELLIGENCE STUDIES/
VAR195,D1-DATA ANALYSIS/
VAR196,D1-ESTIMATES/
VAR197,D1-INTELL ANNEXES TO OPORDS/
VAR198,D1-INTELL COLLECTION PLANS/
VAR199,D1-INTELL COLLECTION TASKING/
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VAR200,D1-INTELL INFO REPORTS/
VAR201,D1-ADP & TELECOMMS INTERFACE/
VAR202,D1-ORDERS OF BATTLE/
VAR203,D1-PHYSICAL SECURITY/
VAR204,D1-TACTICAL PLOTS/
VAR205,D1-NON-INTELL RELATED OUTPUTS/
VAR206,D1-COUNSELING & TRAINING/
VAR207,D1-SPECIAL CASE FLAG/
VAR208,D1-DIS QUESTION/
VAR209,D1-IS THIS VALID DELPHI RESPONSE/
VAR210,D1-CARD #8 SUBCARD NUMBER/
VAR211,D1-CARD #803 SEQUENCE/
VAR212,D1-CARD #803 NUMBER/
VAR213,D2-U-COLLEGE ALGEBRA/
VAR214,D2-N-COLLEGE ALGEBRA/
VAR215,D2-F-COLLEGE ALGEBRA/
VAR216,D2-U-BEGINNING CALCULUS/
VAR217,D2-N-BEGINNING CALCULUS/
VAR218,D2-F-BEGINNING CALCULUS/
VAR219,D2-U-ADVANCED CALCULUS/
VAR220,D2-N-ADVANCED CALCULUS/
VAR221,D2-F-ADVANCED CALCULUS/
VAR222,D2-U-PROBABILITY & STATISTICS/
VAR223,D2-N-PROBABILITY & STATISTICS/
VAR224,D2-F-PROBABILITY & STATISTICS/
VAR225,D2-U-FOREIGN LANGUAGE/
VAR226,D2-N-FOREIGN LANGUAGE/
VAR227,D2-F-FOREIGN LANGUAGE/
VAR228,D2-U-AREA STUDY USSR/
VAR229,D2-N-AREA STUDY USSR/
VAR230,D2-F-AREA STUDY USSR/
VAR231,D2-U-AREA STUDY CHINA/
VAR232,D2-N-AREA STUDY CHINA/
VAR233,D2-F-AREA STUDY CHINA/
VAR234,D2-U-AREA STUDY MID EAST/
VAR235,D2-N-AREA STUDY MID EAST/
VAR236,D2-F-AREA STUDY MID EAST/
VAR237,D2-U-AREA STUDY EUROPE/
VAR238,D2-N-AREA STUDY EUROPE/
VAR239,D2-F-AREA STUDY EUROPE/
VAR240,D2-U-AREA STUDY LATIN AMERICA/
VAR241,D2-N-AREA STUDY LATIN AMERICA/
VAR242,D2-F-AREA STUDY LATIN AMERICA/
VAR243,D2-U-AREA STUDY AFRICA/
VAR244,D2-N-AREA STUDY AFRICA/
VAR245,D2-F-AREA STUDY AFRICA/
VAR246,D2-U-OPERATIONS ANALYSIS/
VAR247,D2-N-OPERATIONS ANALYSIS/
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VAR248,D2-F-OPERATIONS ANALYSIS/
VAR249,D2-U-INTL RELATIONS THEORY/
VAR250,D2-N-INTL RELATIONS THEORY/
VAR251,D2-F-INTL RELATIONS THEORY/
VAR252,D2-U-UW ACOUSTICS/
VAR253,D2-N-UW ACOUSTICS/
VAR254,D2-F-UW ACOUSTICS/
VAR255,D2-U-SONAR SYSTEMS/
VAR256,D2-N-SONAR SYSTEMS/
VAR257,D2-F-SONAR SYSTEMS/
VAR258,D2-U-COMM SYSTEMS/
VAR259,D2-N-COMM SYSTEMS/
VAR260,D2-F-COMM SYSTEMS/
VAR261,D2-U-RADAR SYSTEMS/
VAR262,D2-N-RADAR SYSTEMS/
VAR263,D2-F-RADAR SYSTEMS/
VAR264,D2-U-OPTICS/
VAR265,D2-N-OPTICS/
VAR266,D2-F-OPTICS/
VAR267,D2-U-LASERS/
VAR268,D2-N-LASERS/
VAR269,D2-F-LASERS/
VAR270,D2-U-COLLECTION SYSTEMS/
VAR271,D2-N-COLLECTION SYSTEMS/
VAR272,D2-F-COLLECTION SYSTEMS/
VAR273,D2-SPCIAL CASE FLAG/
VAR274,D2-IS THIS VALID DELPHI B RESPONSE/
VAR275,D2-CARD #804 SUBCARD NUMBER/
VAR276,D2-CARD #804 SEQUENCE/
VAR277,D2-CARD #804 NUMBER/
VAR278,D2-U-THREAT-NET ASSESSMENT/
VAR279,D2-N-THREAT-NET ASSESSMENT/
VAR280,D2-F-THREAT-NET ASSESSMENT/
VAR281,D2-U-NATL SECURITY & INTELL ORGN/
VAR282,D2-N-NATL SECURITY & INTELL ORGN/
VAR283,D2-F-NATL SECURITY & INTELL ORGN/
VAR284,D2-U-SOVIET NAVY STUDY/
VAR285,D2-N-SOVIET NAVY STUDY/
VAR286,D2-F-SOVIET NAVY STUDY/
VAR287,D2-U-SOVIET AF STUDY/
VAR288,D2-N-SOVIET AF STUDY/
VAR289,D2-F-SOVIET AF STUDY/
VAR290,D2-U-SOVIET GROUND FORCE STUDY/
VAR291,D2-N-SOVIET GROUND FORCE STUDY/
VAR292,D2-F-SOVIET GROUND FORCE STUDY/
VAR293,D2-U-SOVIET SRT STUDY/
VAR294,D2-N-SOVIET SRT STUDY/
VAR295,D2-F-SOVIET SRT STUDY/
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VAR296,D2-U-SOVIET MER-FISH-OCEANO STUDY/
VAR297,D2-N-SOVIET MER-FISH-OCEANO STUDY/
VAR298,D2-F-SOVIET MER-FISH-OCEANO STUDY/
VAR299,D2-U-US NAVAL FORCES/
VAR300,D2-N-US NAVAL FORCES/
VAR301,D2-F-US NAVAL FORCES/
VAR302,D2-U-OTHER US FORCES/
VAR303,D2-N-OTHER US FORCES/
VAR304,D2-F-OTHER US FORCES/
VAR305,D2-U-ALLIED CAPABILITY/
VAR306,D2-N-ALLIED CAPABILITY/
VAR307,D2-F-ALLIED CAPABILITY/
VAR308,D2-U-ADP-SYSTEM DESIGN & MGMT/
VAR309,D2-N-ADP-SYSTEM DESIGN & MGMT/
VAR310,D2-F-ADP-SYSTEM DESIGN & MGMT/
VAR311,D2-U-ADP-HARDWARE OPERATIONS/
VAR312,D2-N-ADP-HARDWARE OPERATIONS/
VAR313,D2-F-ADP-HARDWARE OPERATIONS/
VAR314,D2-U-ADP-PROGRAMMING/
VAR315,D2-N-ADP-PROGRAMMING/
VAR316,D2-F-ADP-PROGRAMMING/
VAR317,D2-U-ADP-BASIC INTERFACE OPERATIONS/
VAR318,D2-N-ADP-BASIC INTERFACE OPERATIONS/
VAR319,D2-F-ADP-BASIC INTERFACE OPERATIONS/
VAR320,D2-U-MGMT BY OBJECTIVES/
VAR321,D2-N-MGMT BY OBJECTIVES/
VAR322,D2-F-MGMT BY OBJECTIVES/
VAR323,D2-U-PERSONNEL MGMT/
VAR324,D2-N-PERSONNEL MGMT/
VAR325,D2-F-PERSONNEL MGMT/
VAR326,D2-U-FINANCIAL MGMT/
VAR327,D2-N-FINANCIAL MGMT/
VAR328,D2-F-FINANCIAL MGMT/
VAR329,D2-U-NATL & NAVAL BUDGET PROCESS/
VAR330,D2-N-NATL & NAVAL BUDGET PROCESS/
VAR331,D2-F-NATL & NAVAL BUDGET PROCESS/
VAR332,D2-U-LABOR RELATIONS/
VAR333,D2-N-LABOR RELATIONS/
VAR334,D2-F-LABOR RELATIONS/
VAR335,D2-U-BRIEFING/
VAR336,D2-N-BRIEFING/
VAR337,D2-F-BRIEFING/
VAR338,D2-U-WRITING/
VAR339,D2-N-WRITING/
VAR340,D2-F-WRITING/
VAR341,D2-U-ORGANIZATION OF THOUGHT/
VAR342,D2-N-ORGANIZATION OF THOUGHT/
VAR343,D2-F-ORGANIZATION OF THOUGHT/
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                VAR344,D2-IS THIS VALID DELPHI B RESPONSE/
                VAR345,D2-CARD #805 SUBCARD NUMBER/
                VAR346,D2-CARD #805 SEQUENCE/
                VAR347,D2-CARD #805 CARD NUMBER
COMMENT         THE FOLLOWING UNIT IDENTIFICATION CODES LISTED FOR
                VAR004 ARE VALID UIC'S UNLESS THE NUMBER BEGINS WITH 999XX.
COMMENT         SEQUENCE NUMBERS, VARS 008, 023, 059, 067, 075, 081, AND 085,
                ARE KEYED IN THE FOLLOWING MANNER:
                LCDR MOUNT HAS 001 THROUGH 199
                LT FOSTER HAS 200 THROUGH 399
                LT BICKELL HAS 400 THROUGH 599
                LT HUBER HAS 600 THROUGH 799
                LT WATSON HAS 800 THROUGH 999
VALUE LABELS    VAR004 (03360) USS SARATOGA
                       (03362) USS INDEPENDENCE
                       (03363) USS KITTY HAWK
                       (03321) USS HANCOCK
                       (03334) USS ORISKANY
                       (03341) USS MIDWAY
                       (03342) USS F D ROOSEVELT
                       (03343) USS CORAL SEA
                       (03359) USS FORRESTAL
                       (03361) USS RANGER
                       (03364) USS CONSTELLATION
                       (03366) USS AMERICA
                       (03367) USS KENNEDY
                       (03365) USS ENTERPRISE
                       (05840) USS BLUE RIDGE
                       (20001) USS MOUNT WHITNEY
                       (62856) NAF LAJES
                       (60200) NAS CECIL FIELD
                       (00213) NAS KEY WEST
                       (57007) COMIDEASTFOR
                       (00309) NB GUANTANAMO
                       (62769) NB SUBIC
                       (64591) JSTPS
                       (99901) COMCARGRU ONE
                       (99902) COMCARGRU TWO
                       (99903) COMCARGRU THREE
                       (99904) COMCARGRU FOUR
                       (99905) COMCARGRU FIVE
                       (99906) COMCARGRU SIX
                       (99907) COMCARGRU SEVEN
                       (63126) MISSILE CENTER PT MUGU
                       (30883) NOSIC
                       (66967) FOSIC NORFOLK
                       (66842) FOSIC LONDON
                       (66600) FOSIF ROTA
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(66970) FOSIF WESTPAC
(63013) NUWEPNTRAGRUPAC
(57012) COMNAVAIRLANT
(57025) COMNAVAIRPAC
(09550) COMFAIRMED
(09117) COMFAIRKEF
(99908) COMPATWING ONE
(63981) COMPATWINGSLANT
(05917) COMPATWINGSPAC
(57015) COMPHIBLANT
(57019) COMPHIBPAC
(55297) COMPHIBRON ONE
(55335) COMPHIBRON THREE
(55269) COMPHIBRON FIVE
(55281) COMPHIBRON SEVEN
(00510) COMNAVSOUTH-COM15
(99909) USSOUTHCOM
(99910) CINCEASTLANT
(00061) CINCUSNAVEUR
(57006) COMNAVFORJAPAN
(62894) COMNAVFORKOREA
(31585) CINC UNC-USF KOREA
(57014) COMICEDEFOR
(63842) COMANTDC
(62822) COMUSTDC
(62982) USMAC JUSMAG THAI
(08961) COMSECONDFLT
(57087) COMTHIRDFLT
(57042) COMSIXTHFLT
(57024) COMSEVENTHFLT
(99911) CINCAL
(00038) CINCPAC
(00070) CINCPACFLT
(00066) CINCLANT
(00060) CINCLANTFLT
(63420) NIPSSA
(63415) DIA
(99912) FICEUR
(63186) FICPAC
(99913) FICEURLANT
(68166) NISC
(65134) PACOMELINTCEN
(65792) LANTCOMELINTCEN
(66400) NIPSTRAFAC
(99914) CTF 168
(99915) CTG 168.1
(99916) CTG 168.2
(99917) CTG 168.3

(99918)	FITCLANT
(99919)	FITCPAC
(00015)	COMNAVINTCOM
(62930)	NFOIO
(63285)	NISHQ
(63051)	NISO CHASN
(65493)	NISO EUROPE
(99920)	NISO JAPAN
(99921)	NISO MARIANAS
(63053)	NISO NEW ORLEANS
(63054)	NISO NEW YORK
(63055)	NISO NORFOLK
(63064)	NISO HAWAII
(63057)	NISO SAN DIEGO
(63058)	NISO SAN FRANCISCO
(99922)	COMCRUDESGRU EIGHT
(99923)	COMCRUDESGRU TWELVE
(31695)	NAVCOSSACT
(99924)	FASOTRAGRULANT BRUNS
(96013)	CNA
(99925)	COMFLTCORGRU TWO
(62919)	COMCARIBSEAFRON
(62928)	COMEASTSEAFRON
(99926)	COMSUBGRU FIVE
(99927)	COMSUBGRU SEVEN
(99928)	COMSUBGRU EIGHT
(57016)	COMSUBLANT
(57020)	COMSUBPAC
(99929)	COMAEWWINGPAC
(99930)	COMRECONATKWING ONE
(99931)	VC ONE
(09930)	VQ ONE
(09946)	VQ TWO
(09519)	COMATWING ONE
(99932)	PHIBSCOL CORONADO
(99933)	IPAC
(99934)	NRRF KAMISEYA CTF72
(99935)	COMUSNAVPHIL-CTF 72
(99936)	CNO OP-96
(99937)	NFOIO FRIENDSHIP ANNEX
(99938)	DIA POMPONIO PLAZA
(99939)	DIA ANACOSTIA ANNEX
(99940)	DIA ARLINGTON HALL STATION
(99941)	DIA WASH NAVY YARD ANNEX
(99942)	DIA NSA ANNEX
(99943)	DIA ANMCC ANNEX
(99944)	DIA NEACP
(99945)	DIA CANADIAN DEF HQ

```
        (99946) DIA NATL MIL INTELL CENTER/
VAR005  (0) CONUS
        (1) EUROPE
        (2) PACIFIC
        (3) ATLANTIC-MED AFLOAT
        (4) PACIFIC AFLOAT/
VAR006  ('AF') AFLOAT COMMANDS
        ('AK') ALASKA
        ('AZ') AZORES
        ('CA') CALIFORNIA
        ('CN') NATIONALIST CHINA
        ('CZ') PANAMA CANAL ZONE
        ('DC') WASHINGTON DC
        ('FL') FLORIDA
        ('GM') GUAM
        ('GT') GUANTANAMO
        ('HI') HAWAII
        ('IC') ICELAND
        ('IT') ITALY
        ('JP') JAPAN
        ('KO') KOREA
        ('LA') LOUISIANA
        ('MA') MARIANAS
        ('MD') MARYLAND
        ('ME') MAINE
        ('NB') NEBRASKA
        ('NY') NEW YORK
        ('PA') PENNSYLVANIA
        ('PI') PHILIPPINE ISLANDS
        ('PR') PUERTO RICO
        ('SC') SOUTH CAROLINA
        ('SP') SPAIN
        ('TH') THAILAND
        ('UK') UNITED KINGDOM
        ('VA') VIRGINIA/
VAR007  (1) LCDR MOUNT
        (2) LT FOSTER
        (3) LT BICKELL
        (4) LT HUBER
        (5) LT WATSON/
VAR011  (1) CIVILIAN
        (3) LIEUTENANT
        (4) LCDR
        (5) CDR
        (6) CAPT/
VAR018  (0) LESS THAN BACHELORS DEGREE
        (1) BACHELORS LEVEL
        (2) POSTGRADUATE STUDIES
```

```
                (4) MASTERS LEVEL
                (5) DOCTORAL LEVEL/
          VAR020 (0) NOT FIRST
                (1) FIRST/
          VAR026,VAR028,VAR030,VAR032,VAR034,VAR036,VAR038,VAR040,
          VAR042,VAR044,VAR046,VAR048,VAR050,VAR052,VAR054,VAR056,
          VAR058 (0) NOT VALID
                (1) VALID/
          VAR084 (0) NO COMMENTS
                (1) NO FURTHER COMMENTS
                (2) ADDITIONAL COMMENTS/
          VAR087 TO VAR132,VAR137 TO VAR182,VAR213 TO VAR272,
          VAR275 TO VAR343
                (1) NOT NEEDED
                (2) BASIC KNOWLEDGE
                (3) WORKING KNOWLEDGE
                (4) EXPERT LEVEL/
          VAR207,VAR273
                (0) NOT SPECIAL CASE
                (1) SPECIAL CASE/
          VAR208 (0) DIS QUESTION NOT ASKED
                (1) DIS QUESTION NEGATIVE
                (2) DIS QUESTION AFFIRMATIVE/
          VAR209 (0) DELPHI A NOT RECEIVED
                (1) DELPHI A WAS RECEIVED/
          VAR274,VAR344
                (0) DELPHI B NOT RECEIVED
                (1) DELPHI B WAS RECEIVED/
PRINT FORMATS     VAR001,VAR003,VAR006,VAR010,VAR016,VAR017,VAR019,VAR061,
          VAR062,VAR064,VAR065,VAR069,VAR070,VAR072,VAR073,VAR077,
          VAR078,VAR083 (A)
CODEBOOK          VAR213
OPTIONS           4
STATISTICS        ALL
READ INPUT DATA
SAVE FILE
FINISH
```

APPENDIX F

SAMPLE P

ALGOL SOURCE PROGRAM TO VALIDATE
QCARDS FILE, WITH EXAMPLE PRINTOUT

```
//HUBER003 JOB (2600,0678,YS42),'HUBER,E.W.'
// EXEC ALGWCLG
//ALGOL.SYSIN DD *
%ALGOL
BEGIN

STRING (25) VAR001;
STRING (37) VAR003;
STRING (2) VAR006;
STRING (40) VAR010;
STRING (32) VAR061, VAR064, VAR069, VAR072, VAR077;
STRING (75) VAR083;
STRING (1) VAR005A, VAR007A, VAR009A, VAR011A, VAR018A, VAR020A,
   VAR024A, VAR026A, VAR028A, VAR030A, VAR032A, VAR034A, VAR036A,
   VAR038A, VAR040A, VAR042A, VAR044A, VAR046A, VAR048A, VAR050A,
   VAR052A, VAR054A, VAR056A, VAR058A, VAR060A, VAR068A, VAR076A,
   VAR082A, VAR084A, VAR086A;
STRING (2) VAR012A, VAR021A, VAR022A;
STRING (3) VAR008A, VAR023A, VAR025A, VAR027A, VAR029A, VAR031A,
   VAR033A, VAR035A, VAR037A, VAR039A, VAR041A, VAR043A, VAR045A,
   VAR047A, VAR049A, VAR051A, VAR053A, VAR055A, VAR057A, VAR059A,
   VAR062A, VAR063A, VAR065A, VAR066A, VAR067A, VAR070A, VAR071A,
   VAR073A, VAR074A, VAR075A, VAR078A, VAR079A, VAR080A, VAR081A,
   VAR085A;
STRING (4) VAR013A, VAR014A, VAR015A;
STRING (5) VAR002A, VAR004A, VAR016, VAR017, VAR019;
INTEGER VAR002, VAR004, VAR005, VAR007, VAR008, VAR009,
   VAR011, VAR012, VAR013, VAR014, VAR015, VAR018, VAR020, VAR021,
   VAR022, VAR023, VAR024, VAR025, VAR026, VAR027, VAR028, VAR029,
   VAR030, VAR031, VAR032, VAR033, VAR034, VAR035, VAR036, VAR037,
   VAR038, VAR039, VAR040, VAR041, VAR042, VAR043, VAR044, VAR045,
   VAR046, VAR047, VAR048, VAR049, VAR050, VAR051, VAR052, VAR053,
   VAR054, VAR055, VAR056, VAR057, VAR058, VAR059, VAR060, VAR062,
   VAR063, VAR065, VAR066, VAR067, VAR068, VAR070, VAR071, VAR073,
   VAR074, VAR075, VAR076, VAR078, VAR079, VAR080, VAR081, VAR082,
   VAR084, VAR085, VAR086, QCASES;

INTEGER PROCEDURE CONVERT (STRING (6) VALUE T);
   BEGIN INTEGER INTVALUE, POSITION;
   INTVALUE := POSITION := 0;
   WHILE (T(POSITION|1) = " ") AND (POSITION ¬= 5) DO
      POSITION := POSITION + 1;
   FOR U := POSITION UNTIL 5 DO IF T(U|1) = " " THEN GO TO XIT ELSE
      INTVALUE := 10 * INTVALUE + (DECODE(T(J|1)) - 240);
   XIT: POSITION := 0;
   INTVALUE END;

PROCEDURE GETCASE;
```

```
    BEGIN IMAGE1;
    IMAGE2;
    IMAGE3;
    IMAGE4;
    IMAGE5;
    IMAGE6;
    IMAGE7;
    END;

PROCEDURE IMAGE1;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR001 := BUFFER(0|25);
    VAR002 := CONVERT (BUFFER(25|5));
    VAR002A := BUFFER(25|5);
    VAR003 := BUFFER(30|37);
    VAR004 := CONVERT (BUFFER(67|5));
    VAR004A := BUFFER(67|5);
    VAR005 := CONVERT (BUFFER(72|1));
    VAR005A := BUFFER(72|1);
    VAR006 := BUFFER (73|2);
    VAR007 := CONVERT (BUFFER(75|1));
    VAR007A := BUFFER(75|1);
    VAR008 := CONVERT (BUFFER(76|3));
    VAR008A := BUFFER(76|3);
    VAR009 := CONVERT (BUFFER(79|1));
    VAR009A := BUFFER(79|1);
    END;

PROCEDURE IMAGE2;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR010 := BUFFER(0|40);
    VAR011 := CONVERT (BUFFER(40|1));
    VAR011A := BUFFER(40|1);
    VAR012 := CONVERT (BUFFER(41|2));
    VAR012A := BUFFER(41|2);
    VAR013 := CONVERT (BUFFER(43|4));
    VAR013A := BUFFER(43|4);
    VAR014 := CONVERT (BUFFER(47|4));
    VAR014A := BUFFER(47|4);
    VAR015 := CONVERT (BUFFER(51|4));
    VAR015A := BUFFER(51|4);
    VAR016 := BUFFER(55|5);
    VAR017 := BUFFER(60|5);
    VAR018 := CONVERT (BUFFER(65|1));
    VAR018A := BUFFER(65|1);
    VAR019 := BUFFER(66|5);
```

```
    VAR020 := CONVERT (BUFFER(71|1));
    VAR020A := BUFFER(71|1);
    VAR021 := CONVERT (BUFFER(72|2));
    VAR021A := BUFFER(72|2);
    VAR022 := CONVERT (BUFFER(74|2));
    VAR022A := BUFFER(74|2);
    VAR023 := CONVERT (BUFFER(76|3));
    VAR023A := BUFFER(76|3);
    VAR024 := CONVERT (BUFFER(79|1));
    VAR024A := BUFFER(79|1);
    END;

PROCEDURE IMAGE3;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR025 := CONVERT (BUFFER(0|3));
    VAR025A := BUFFER(0|3);
    VAR026 := CONVERT (BUFFER(3|1));
    VAR026A := BUFFER(3|1);
    VAR027 := CONVERT (BUFFER(4|3));
    VAR027A := BUFFER(4|3);
    VAR028 := CONVERT (BUFFER(7|1));
    VAR028A := BUFFER(7|1);
    VAR029 := CONVERT (BUFFER(8|3));
    VAR029A := BUFFER(8|3);
    VAR030 := CONVERT (BUFFER(11|1));
    VAR030A := BUFFER(11|1);
    VAR031 := CONVERT (BUFFER(12|3));
    VAR031A := BUFFER(12|3);
    VAR032 := CONVERT (BUFFER(15|1));
    VAR032A := BUFFER(15|1);
    VAR033 := CONVERT (BUFFER(16|3));
    VAR033A := BUFFER(16|3);
    VAR034 := CONVERT (BUFFER(19|1));
    VAR034A := BUFFER(19|1);
    VAR035 := CONVERT (BUFFER(20|3));
    VAR035A := BUFFER(20|3);
    VAR036 := CONVERT (BUFFER(23|1));
    VAR036A := BUFFER(23|1);
    VAR037 := CONVERT (BUFFER(24|3));
    VAR037A := BUFFER(24|3);
    VAR038 := CONVERT (BUFFER(27|1));
    VAR038A := BUFFER(27|1);
    VAR039 := CONVERT (BUFFER(28|3));
    VAR039A := BUFFER(28|3);
    VAR040 := CONVERT (BUFFER(31|1));
    VAR040A := BUFFER(31|1);
    VAR041 := CONVERT (BUFFER(32|3));
```

```
VAR041A := BUFFER(32|3);
VAR042 := CONVERT (BUFFER(35|1));
VAR042A := BUFFER(35|1);
VAR043 := CONVERT (BUFFER(36|3));
VAR043A := BUFFER(36|3);
VAR044 := CONVERT (BUFFER(39|1));
VAR044A := BUFFER(39|1);
VAR045 := CONVERT (BUFFER(40|3));
VAR045A := BUFFER(40|3);
VAR046 := CONVERT (BUFFER(43|1));
VAR046A := BUFFER(43|1);
VAR047 := CONVERT (BUFFER(44|3));
VAR047A := BUFFER(44|3);
VAR048 := CONVERT (BUFFER(47|1));
VAR048A := BUFFER(47|1);
VAR049 := CONVERT (BUFFER(48|3));
VAR049A := BUFFER(48|3);
VAR050 := CONVERT (BUFFER(51|1));
VAR050A := BUFFER(51|1);
VAR051 := CONVERT (BUFFER(52|3));
VAR051A := BUFFER(52|3);
VAR052 := CONVERT (BUFFER(55|1));
VAR052A := BUFFER(55|1);
VAR053 := CONVERT (BUFFER(56|3));
VAR053A := BUFFER(56|3);
VAR054 := CONVERT (BUFFER(59|1));
VAR054A := BUFFER(59|1);
VAR055 := CONVERT (BUFFER(60|3)):
VAR055A := BUFFER(60|3);
VAR056 := CONVERT (BUFFER(63|1));
VAR056A := BUFFER(63|1);
VAR057 := CONVERT (BUFFER(64|3));
VAR057A := BUFFER(64|3);
VAR058 := CONVERT (BUFFER(67|1));
VAR058A := BUFFER(67|1);
VAR059 := CONVERT (BUFFER(76|3));
VAR059A := BUFFER(76|3);
VAR060 := CONVERT (BUFFER(79|1));
VAR060A := BUFFER(79|1);
END;

PROCEDURE IMAGE4;
  BEGIN STRING (80) BUFFER;
  READCARD (BUFFER);
  VAR061 := BUFFER(0|32);
  VAR062 := CONVERT (BUFFER(32|3));
  VAR062A := BUFFER(32|3);
  VAR063 := CONVERT (BUFFER(35|3));
```

```
    VAR063A := BUFFER(35|3);
    VAR064 := BUFFER(38|32);
    VAR065 := CONVERT (BUFFER(70|3));
    VAR065A := BUFFER(70|3);
    VAR066 := CONVERT (BUFFER(73|3));
    VAR066A := BUFFER(73|3);
    VAR067 := CONVERT (BUFFER(76|3));
    VAR067A := BUFFER(76|3);
    VAR068 := CONVERT (BUFFER(79|1));
    VAR068A := BUFFER(79|1);
    END;

PROCEDURE IMAGE5;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR069 := BUFFER(0|32);
    VAR070 := CONVERT (BUFFER(32|3));
    VAR070A := BUFFER(32|3);
    VAR071 := CONVERT (BUFFER(35|3));
    VAR071A := BUFFER(35|3);
    VAR072 := BUFFER(38|32);
    VAR073 := CONVERT (BUFFER(70|3));
    VAR073A := BUFFER(70|3);
    VAR074 := CONVERT (BUFFER(73|3));
    VAR074A := BUFFER(73|3);
    VAR075 := CONVERT (BUFFER(76|3));
    VAR075A := BUFFER(76|3);
    VAR076 := CONVERT (BUFFER(79|1));
    VAR076A := BUFFER(79|1);
    END;

PROCEDURE IMAGE6;
    BEGIN STRING (80) BUFFER;
    READCARD (BUFFER);
    VAR077 := BUFFER(0|32);
    VAR078 := CONVERT (BUFFER(32|3));
    VAR078A := BUFFER(32|3);
    VAR079 := CONVERT (BUFFER(35|3));
    VAR079A := BUFFER(35|3);
    VAR080 := CONVERT (BUFFER(38|3));
    VAR080A := BUFFER(38|3);
    VAR081 := CONVERT (BUFFER(76|3));
    VAR081A := BUFFER(76|3);
    VAR082 := CONVERT (BUFFER(79|1));
    VAR082A := BUFFER(79|1);
    END;

PROCEDURE IMAGE7;
```

```
   BEGIN STRING (80) BUFFER;
   READCARD (BUFFER);
   VAR083 := BUFFER(0|75);
   VAR084 := CONVERT (BUFFER(75|1));
   VAR084A := BUFFER(75|1);
   VAR085 := CONVERT (BUFFER(76|3));
   VAR085A := BUFFER(76|3);
   VAR086 := CONVERT (BUFFER(79|1));
   VAR086A := BUFFER(79|1);
   END;

PROCEDURE VALIDATECASE;
BEGIN
LOGICAL PROCEDURE DESIGCHECK (INTEGER VALUE DESIGX);
   BEGIN
   INTEGER DESIG;
   LOGICAL ANSWER;
   DESIG := (DESIGX DIV 10) * 10;
   ANSWER := IF ((DESIG = 1100) OR (DESIG = 1110) OR (DESIG = 1120) OR
      (DESIG = 1130) OR (DESIG = 1310) OR (DESIG = 1320) OR
      (DESIG = 1350) OR (DESIG = 1630) OR (DESIG = 6620) OR
      (DESIG = 6630) OR (DESIG = 1610) OR (DESIG = 0000) OR
      (DESIG = 9990)) THEN TRUE ELSE FALSE;
   ANSWER END;
IF ¬((VAR004 = 03360) OR (VAR004 = 03362) OR (VAR004 = 03363) OR
   (VAR004 = 03321) OR (VAR004 = 03334) OR (VAR004 = 03341) OR
   (VAR004 = 03342) OR (VAR004 = 03343) OR (VAR004 = 03359) OR
   (VAR004 = 03361) OR (VAR004 = 03364) OR (VAR004 = 03365) OR
   (VAR004 = 03367) OR (VAR004 = 03365) OR (VAR004 = 05840) OR
   (VAR004 = 20001) OR (VAR004 = 62856) OR (VAR004 = 60200) OR
   (VAR004 = 00213) OR (VAR004 = 57007) OR (VAR004 = 00309) OR
   (VAR004 = 62769) OR (VAR004 = 64591) OR (VAR004 = 99901) OR
   (VAR004 = 99902) OR (VAR004 = 99903) OR (VAR004 = 99904) OR
   (VAR004 = 99905) OR (VAR004 = 99906) OR (VAR004 = 99907) OR
   (VAR004 = 63126) OR (VAR004 = 30883) OR (VAR004 = 66967) OR
   (VAR004 = 66842) OR (VAR004 = 66600) OR (VAR004 = 66970) OR
   (VAR004 = 63013) OR (VAR004 = 57012) OR (VAR004 = 57025) OR
   (VAR004 = 09550) OR (VAR004 = 09117) OR (VAR004 = 99908) OR
   (VAR004 = 63981) OR (VAR004 = 05917) OR (VAR004 = 57015) OR
   (VAR004 = 57019) OR (VAR004 = 55297) OR (VAR004 = 55335) OR
   (VAR004 = 55269) OR (VAR004 = 55281) OR (VAR004 = 00510) OR
   (VAR004 = 99909) OR (VAR004 = 99910) OR (VAR004 = 00061) OR
   (VAR004 = 57006) OR (VAR004 = 62894) OR (VAR004 = 31585) OR
   (VAR004 = 57014) OR (VAR004 = 63842) OR (VAR004 = 62822) OR
   (VAR004 = 62982) OR (VAR004 = 08951) OR (VAR004 = 57087) OR
   (VAR004 = 57042) OR (VAR004 = 57024) OR (VAR004 = 99911) OR
   (VAR004 = 00038) OR (VAR004 = 00070) OR (VAR004 = 00066) OR
   (VAR004 = 00060) OR (VAR004 = 63420) OR (VAR004 = 63415) OR
```

```
    (VAR004 = 99912) OR (VAR004 = 63186) OR (VAR004 = 99913) OR
    (VAR004 = 68166) OR (VAR004 = 65134) OR (VAR004 = 65792) OR
    (VAR004 = 66400) OR (VAR004 = 99914) OR (VAR004 = 99915) OR
    (VAR004 = 99916) OR (VAR004 = 99917) OR (VAR004 = 99918) OR
    (VAR004 = 99919) OR (VAR004 = 00015) OR (VAR004 = 62930) OR
    (VAR004 = 63285) OR (VAR004 = 63051) OR (VAR004 = 65493) OR
    (VAR004 = 99920) OR (VAR004 = 99921) OR (VAR004 = 63053) OR
    (VAR004 = 63054) OR (VAR004 = 63055) OR (VAR004 = 63064) OR
    (VAR004 = 63056) OR (VAR004 = 63057) OR (VAR004 = 63058) OR
    (VAR004 = 99922) OR (VAR004 = 99923) OR (VAR004 = 31695) OR
    (VAR004 = 99924) OR (VAR004 = 96013) OR (VAR004 = 99925) OR
    (VAR004 = 62919) OR (VAR004 = 62928) OR (VAR004 = 99926) OR
    (VAR004 = 99927) OR (VAR004 = 99928) OR (VAR004 = 57016) OR
    (VAR004 = 57020) OR (VAR004 = 99929) OR (VAR004 = 99930) OR
    (VAR004 = 99931) OR (VAR004 = 09930) OR (VAR004 = 09946) OR
    (VAR004 = 09519) OR (VAR004 = 99932) OR (VAR004 = 99933) OR
    (VAR004 = 99934) OR (VAR004 = 99935) OR (VAR004 = 99936) OR
    (VAR004 = 99937) OR (VAR004 = 99938) OR (VAR004 = 99939) OR
    (VAR004 = 99940) OR (VAR004 = 99941) OR (VAR004 = 99942) OR
    (VAR004 = 99943) OR (VAR004 = 99944) OR (VAR004 = 99945) OR
    (VAR004 = 99946))
    THEN WRITE ("INVALID UNIT IDENTIFICATION CODE");
IF  (VAR005 < 0) OR (VAR005 > 4) THEN WRITE ("INVALID GEOGRAPHIC CODE");
IF  ¬((VAR006 = "AK") OR (VAR006 = "AZ") OR (VAR006 = "CA") OR
    (VAR006 = "CN") OR (VAR006 = "CZ") OR (VAR006 = "DC") OR
    (VAR006 = "FL") OR (VAR006 = "GM") OR (VAR006 = "GT") OR
    (VAR006 = "HI") OR (VAR006 = "IC") OR (VAR006 = "IT") OR
    (VAR006 = "JP") OR (VAR006 = "KO") OR (VAR006 = "LA") OR
    (VAR006 = "MA") OR (VAR006 = "MD") OR (VAR006 = "ME") OR
    (VAR006 = "NB") OR (VAR006 = "NY") OR (VAR006 = "PA") OR
    (VAR006 = "PI") OR (VAR006 = "PR") OR (VAR006 = "SC") OR
    (VAR006 = "SP") OR (VAR006 = "TH") OR (VAR006 = "UK") OR
    (VAR006 = "VA") OR (VAR006 = "AF")) THEN WRITE
    ("INVALID STATE/COUNTRY CODE");
IF  (((VAR007 = 1) AND (VAR008 >= 200)) OR
    ((VAR007 = 2) AND ((VAR008 < 200) OR (VAR008 >= 400))) OR
    ((VAR007 = 3) AND ((VAR008 < 400) OR (VAR008 >= 600))) OR
    ((VAR007 = 4) AND ((VAR008 < 600) OR (VAR008 >= 800))) OR
    ((VAR007 = 5) AND (VAR008 < 800))) THEN WRITE
    ("CODER NUMBER DOES NOT AGREE WITH CASE BLOCK NUMBERS");
IF  (VAR007 < 1) OR (VAR007 > 5) THEN WRITE ("INVALID CODER NUMBER");
IF  (VAR008 ¬= VAR023) OR (VAR008 ¬= VAR059) OR (VAR008 ¬= VAR067) OR
    (VAR008 ¬= VAR075) OR (VAR008 ¬= VAR081) OR (VAR008 ¬= VAR085) THEN
    WRITE ("CASE NUMBERS NOT EQUAL THROUGHOUT THE CASE");
IF  (VAR009 ¬= 1) OR (VAR024 ¬= 2) OR (VAR060 ¬= 3) OR (VAR068 ¬= 4) OR
    (VAR076 ¬= 5) OR (VAR082 ¬= 6) OR (VAR086 ¬= 7) THEN WRITE
    ("INVALID CARD NUMBER");
IF  ¬((VAR011 = 1) OR ((VAR011 >= 3) AND (VAR011 <= 6))) THEN
```

```
   WRITE ("INVALID RANK CODE");
IF (VAR012 < 30) OR ((VAR012 > 55) AND (VAR012 ¬= 99))
   THEN WRITE ("CAUTION, CHECK AGE");
IF ¬(DESIGCHECK(VAR013) AND DESIGCHECK(VAR014) AND
   DESIGCHECK(VAR015)) THEN WRITE ("POSSIBLE INVALID DESIGNATOR");
IF (VAR018 < 0) OR ((VAR018 > 5) AND (VAR018 ¬= 9))
   THEN WRITE ("INVALID EDUCATION CODE");
IF ¬((VAR020 = 0) OR (VAR020 = 1) OR (VAR020 = 9)) THEN WRITE
   ("INVALID FIRST INTELL BILLET CODE");
IF (VAR021 < 0) OR ((VAR021 > 25) AND (VAR021 ¬= 99)) THEN WRITE
   ("CAUTION, CHECK YEARS EXPERIENCE");
IF (VAR022 < 0) OR ((VAR022 > 48) AND (VAR022 ¬= 99)) THEN WRITE
   ("CAUTION, CHECK MONTHS IN BILLET");
IF +(IF VAR025 = 999 THEN 0 ELSE VAR025)
   +(IF VAR027 = 999 THEN 0 ELSE VAR027)
   +(IF VAR029 = 999 THEN 0 ELSE VAR029)
   +(IF VAR031 = 999 THEN 0 ELSE VAR031)
   +(IF VAR033 = 999 THEN 0 ELSE VAR033)
   +(IF VAR035 = 999 THEN 0 ELSE VAR035)
   +(IF VAR037 = 999 THEN 0 ELSE VAR037)
   +(IF VAR039 = 999 THEN 0 ELSE VAR039)
   +(IF VAR041 = 999 THEN 0 ELSE VAR041)
   +(IF VAR043 = 999 THEN 0 ELSE VAR043)
   +(IF VAR045 = 999 THEN 0 ELSE VAR045)
   +(IF VAR047 = 999 THEN 0 ELSE VAR047)
   +(IF VAR049 = 999 THEN 0 ELSE VAR049)
   +(IF VAR051 = 999 THEN 0 ELSE VAR051)
   +(IF VAR053 = 999 THEN 0 ELSE VAR053)
   +(IF VAR055 = 999 THEN 0 ELSE VAR055)
   +(IF VAR057 = 999 THEN 0 ELSE VAR057)
   +(IF VAR063 = 999 THEN 0 ELSE VAR063)
   +(IF VAR066 = 999 THEN 0 ELSE VAR066)
   +(IF VAR071 = 999 THEN 0 ELSE VAR071)
   +(IF VAR074 = 999 THEN 0 ELSE VAR074)
   +(IF VAR079 = 999 THEN 0 ELSE VAR079)
   +(IF VAR080 = 999 THEN 0 ELSE VAR080) ¬= 100 THEN WRITE
   ("CAUTION, OUTPUTS DON'T EQUAL 100%");
IF ¬((VAR026 = 0) OR (VAR026 = 1) OR (VAR026 = 9)) OR
   ¬((VAR028 = 0) OR (VAR028 = 1) OR (VAR028 = 9)) OR
   ¬((VAR030 = 0) OR (VAR030 = 1) OR (VAR030 = 9)) OR
   ¬((VAR032 = 0) OR (VAR032 = 1) OR (VAR032 = 9)) OR
   ¬((VAR034 = 0) OR (VAR034 = 1) OR (VAR034 = 9)) OR
   ¬((VAR036 = 0) OR (VAR036 = 1) OR (VAR036 = 9)) OR
   ¬((VAR038 = 0) OR (VAR038 = 1) OR (VAR038 = 9)) OR
   ¬((VAR040 = 0) OR (VAR040 = 1) OR (VAR040 = 9)) OR
   ¬((VAR042 = 0) OR (VAR042 = 1) OR (VAR042 = 9)) OR
   ¬((VAR044 = 0) OR (VAR044 = 1) OR (VAR044 = 9)) OR
   ¬((VAR046 = 0) OR (VAR046 = 1) OR (VAR046 = 9)) OR
```

```
    ¬((VAR048 = 0) OR (VAR048 = 1) OR (VAR048 = 9)) OR
    ¬((VAR050 = 0) OR (VAR050 = 1) OR (VAR050 = 9)) OR
    ¬((VAR052 = 0) OR (VAR052 = 1) OR (VAR052 = 9)) OR
    ¬((VAR054 = 0) OR (VAR054 = 1) OR (VAR054 = 9)) OR
    ¬((VAR056 = 0) OR (VAR056 = 1) OR (VAR056 = 9)) OR
    ¬((VAR058 = 0) OR (VAR058 = 1) OR (VAR058 = 9)) THEN WRITE
    ("INVALID OUTPUT VALIDITY CODE");
IF ¬((VAR084 = 0) OR (VAR084 = 1) OR (VAR084 = 2)) OR ((VAR084 = 0) AND
    (VAR083(0|30) ¬= "                              ")) THEN WRITE
    ("INVALID COMMENTS CONTINUATION CODE");
    END;

READ (QCASES);
FOR I := 1 UNTIL QCASES DO
BEGIN GETCASE;
WRITE (VAR008A);
VALIDATECASE;
END;
END.
//LINK.SYSLIB DD UNIT=2314,VOL=SER=DUFFY,DISP=SHR,DSN=S2600.ALGOLW
//             DD DISP=SHR,DSN=SYS3.ALGOLW,UNIT=2314,VOL=SER=LINDA
//LINK.SYSPRINT DD DUMMY
//GO.SYSIN DD UNIT=2311,VOL=SER=SYS003,DISP=(OLD,KEEP),LABEL=(,,,IN),
//     DCB=(RECFM=FB,LRECL=80,BLKSIZE=3600),DSNAME=S2600.QCARDS
//GO.SYSIN DD *
```

```
832
833
834
835
836
837
838
CAUTION, OUTPUTS DON'T EQUAL 100%
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
CAUTION, CHECK AGE
868
869
870
871
CAUTION, CHECK YEARS EXPERIENCE
872
POSSIBLE INVALID DESIGNATOR
873
874
875
876
```

APPENDIX F

SAMPLE Q

ALGOL SOURCE PROGRAM TO PRINT AND VERIFY D2CARDS, WITH EXAMPLE PRINTOUT

```
//HUBER8 JOB (2600,0578,YS42),'HUBER,E.W.'
// EXEC ALGOLW
//SYSPRINT DD SYSOUT=D,SPACE=(CYL,(5,1))
//SYSIN DD *
%ALGOL PAGES=350
BEGIN
STRING (80) BUFFER1, BUFFER2;
STRING (3) CARD1CASE, CARD2CASE;

PROCEDURE ROLLIN (INTEGER VALUE QTY);
    FOR X := 1 UNTIL QTY DO
    BEGIN
    BUFFER1 := BUFFER2;
    READCARD(BUFFER2);
    CARD1CASE := BUFFER1(76|3);
    CARD2CASE := BUFFER2(76|3);
    IF CARD2CASE = "999" THEN GO TO THATSALL;
    END;

WRITE ("START RUN");
TOP: IOCONTROL (3);
ROLLIN (2);
WHILE CARD1CASE ¬= CARD2CASE DO
    BEGIN
    WRITE ("CARD MISSING ", CARD1CASE, " ", CARD2CASE);
    ROLLIN (1);
    END;
IOCONTROL (3);
WRITE ("CASE NUMBER ", CARD1CASE, " D2CARD PRINTOUT");
IF BUFFER1(60|1) = "1" THEN WRITEON (" FLAGGED AS SPECIAL CASE");
IF (BUFFER1(73|3) ¬= "104") OR (BUFFER1(79|1) ¬= "8") OR
    (BUFFER2(73|3) ¬= "105") OR (BUFFER2(79|1) ¬= "8")
    THEN WRITE ("INVALID CONTROL BLOCK");
IF ¬((BUFFER1(60|1) = "0") OR (BUFFER1(60|1) = "1"))
    THEN WRITE ("INVALID FLAG CODE");
WRITE (" ");
FOR X := 0 STEP 3 UNTIL 57 DO WRITE (BUFFER1(X|1), "   ",
    BUFFER1(X+1|1), "   ", BUFFER1(X+2|1));
WRITE (" ");
FOR X := 0 STEP 3 UNTIL 63 DO WRITE (BUFFER2(X|1), "   ",
    BUFFER2(X+1|1), "   ", BUFFER2(X+2|1));
FOR X := 0 UNTIL 59 DO IF ¬((BUFFER1(X|1) = "1") OR
    (BUFFER1(X|1) = "2") OR (BUFFER1(X|1) = "3") OR
    (BUFFER1(X|1) = "4") OR (BUFFER1(X|1) = "9")) THEN
    WRITE ("CARD 804 HAS INVALID EDU LEVEL COLUMN ", X+1);
FOR X := 0 UNTIL 65 DO IF ¬((BUFFER2(X|1) = "1") OR
    (BUFFER2(X|1) = "2") OR (BUFFER2(X|1) = "3") OR
    (BUFFER2(X|1) = "4") OR (BUFFER2(X|1) = "9")) THEN
```

```
   WRITE ("CARD 805 HAS INVALID EDU LEVEL COLUMN ", X+1);
GO TO TOP;
THATSALL: WRITE ("END RUN");
END.
%EOF
```

CASE NUMBER 200 D2CARD PRINTOUT

1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	2	3
1	1	1
2	2	2
2	2	2
2	2	2
2	2	2
2	2	2
1	2	2
3	3	3
2	2	2
3	3	3
4	4	4
3	3	3
2	2	2
2	2	2
4	4	4
3	3	3
2	2	2
2	2	2
1	2	2
2	3	3
2	2	2
3	3	3
3	3	3
3	3	3
2	2	2
2	2	2
2	2	2
4	4	4
4	4	4
4	4	4

APPENDIX F

SAMPLE R

MULTIVARIATE ANALYSIS OF VARIANCE – FORTRAN SOURCE PROGRAM AND SAMPLE OUTPUT

```
//HUBER7 JOB (2089,0678,YS42),'HUBER,E.W.',TIME=4
// EXEC FORTCLG,REGION=160K
//FORT.SYSIN DD *
C      MULTIVARIATE ANALYSIS OF VARIANCE.  A  COOLEY-LOHNES ROUTINE
C    WHICH HAS BEEN MODIFIED BY E. W. HUBER FOR THE NAVAL POSTGRADUATE
C    SCHOOL IBM 360/67 COMPUTER SYSTEM.  CHANGES INCLUDE THE USE OF
C    STANDARD IMSL DOUBLE-PRECISION MATRIX INVERSION AND DETERMINANT
C    CALCULATIONS FOR THOSE SITUATIONS WHERE THE INPUT MATRIX IS VERY
C    CLOSE TO SINGULARITY, AND F-DISTRIBUTION VALUES ARE CALCULATED
C    AND PRINTED WITH EACH ASSOCIATED TEST.
C
C      THIS PROGRAM COMPUTES MANOVA TESTS OF H1 (EQUALITY OF DISPERSION)
C    AND H2 (EQUALITY OF CENTROIDS), UNIVARIATE F-RATIOS FOR MEANS,
C    SELECTED SAMPLE STATISTICS, AND THE W (POOLED WITHIN-GROUP SSCP)
C    AND T (TOTAL SAMPLE SSCP) MATRICES REQUIRED FOR THE DISCRIMINANT
C    ANALYSIS PROGRAM.  THESE MATRICES ARE PUNCHED IN UPPER-TRIANGULAR
C    FORM.  THE PROGRAM WILL PROCESS UP TO 50 VARIABLES AND ANY NUMBER
C    OF GROUPS.
C
C      INPUT
C
C    1) FIRST TEN CARDS OF THE DATA DECK DESCRIBE THE PROBLEM IN A TEXT
C       WHICH WILL BE REPRODUCED ON THE OUTPUT.
C    2) CONTROL CARD (CARD11)
C       COLS 1-2    M = NUMBER OF VARIABLES
C       COLS 3-5    KG = NUMBER OF GROUPS
C    3) EACH GROUP OF SCORE CARDS IS PRECEDED BY A CARD GIVING
C       NG = NUMBER OF SUBJECTS IN THE GROUP (COLS 1-5).
C       THUS, SUBJECTS MUST BE SORTED INTO GROUPS AND THE GROUPS COUNTED
C       BEFORE MANOVA CAN BE RUN.
C
C    PUNCHED OUTPUT IS ALL TO FORMAT (10X,5E14.7/10X,5E14.7), AND IS:
C
C    1) GROUP MEANS, FOLLOWED BY GRAND MEANS.
C    2) T MATRIX (TOTAL SAMPLE DEVIATION SSCP MATRIX).
C    3) W MATRIX (POOLED WITHIN-GROUPS DEVIATION SSCP MATRIX).
C    4) D INVERSE (INVERSE OF POOLED-SAMPLES DISPERSION ESTIMATE).
C
C
      DIMENSION TITLE(20), A(50,50), B(50,50), C(50,50), D(50,50),
     2 T(50), U(50), V(50), W(50), X(50), PVT1(50), PVT2(50)
      REAL*8 Q(50,50), QA(50,50), IQP(50), QE(50), DQ1, DQ2, DQ3, DQ4,
     2 QWORK(2700)
C
    1 WRITE (6,2)
    2 FORMAT (1H1,25X,40HMANOVA. A MODIFIED COOLEY-LOHNES PROGRAM)
      DO 3 J = 1, 10
      READ (5,4)  (TITLE(K), K = 1, 20)
```

```
      4 FORMAT (20A4)
      3 WRITE (6,81)  (TITLE(K), K = 1, 20)
     81 FORMAT (26X,20A4)
        READ (5,5)  M, KG
      5 FORMAT (I2,I3)
        EM = M
        EKG = KG
        EK = KG
        WRITE (6,6)  M, KG
      6 FORMAT (14H0ANALYSIS FOR I3,15H VARIABLES AND I4,7H GROUPS)
        WRITE (6,9)
      9 FORMAT (1H0, 30(4H----))
        DO 7  J = 1, M
        T(J) = 0.0
        DO 7  K = 1, M
        B(J,K) = 0.0
      7 C(J,K) = 0.0
        HILOGS = 0.0
        GAIS = 0.0
        FAIS = 0.0
        N = 0
C
        DO 19  IG = 1, KG
        READ (5,8)  NG
      8 FOPMAT (I5)
        ENG = NG
        N = N + NG
        WRITE (6,9)
        WRITE (6,10)  IG, NG
     10 FORMAT (7H0GROUP I3,8H,  NG = I6)
        DO 11  J = 1, M
        U(J) = 0.0
        DO 11  K = 1, M
     11 A(J,K) = 0.0
        DO 12  NS = 1, NG
        READ (5,75)  (V(J), J = 1, M)
C    CHANGE FOLLOWING FORMAT STATEMENT TO MATCH INPUT DATA FORMAT:
     75 FORMAT (42F1.0)
C    THE FOLLOWING LOOP CONVERTS MISSING DATA TO THE NOT NEEDED OR
C    NOT USED CODE, I.E., A "1"
        DO 56  J = 1, M
        IF (V(J) - 5.0)  56, 55, 55
     55 V(J) = 1.0
     56 CONTINUE
C
        DO 12  J = 1, M
        U(J) = U(J) + V(J)
        T(J) = T(J) + V(J)
```

```
      DO 12  K = 1, M
      A(J,K) = A(J,K) + V(J) * V(K)
   12 C(J,K) = C(J,K) + V(J) * V(K)
      DO 13  J = 1, M
      DO 13  K = 1, M
      A(J,K) = A(J,K) - U(J) * U(K) / ENG
      B(J,K) = B(J,K) + A(J,K)
   13 A(J,K) = A(J,K) / (ENG - 1.0)
      DO 14  J = 1, M
      U(J) = U(J) / ENG
   14 W(J) = SQRT (A(J,J))
C
      WRITE (6,15)  IG
   15 FORMAT (17HOMEANS FOR GROUP I4)
      WRITE (6,16)  (U(J), J = 1, M)
   16 FORMAT (1X,10F12.3)
      WRITE (7,30)  IG, (U(J), J = 1, M)
   30 FORMAT (5H ROW I3,2X,5E14.7/(10X,5E14.7))
      WRITE (6,17)
   17 FORMAT (20HOSTANDARD DEVIATIONS)
      WRITE (6,16)  (W(J), J = 1, M)
      DO 71  J = 1, M
      DO 71  K = 1, M
   71 Q(J,K) = A(J,K)
      IDGT = 0
      CALL LUDATF (Q,QA,M,50,IDGT,DQ1,DQ2,IQP,QE,WQ,IER)
      DET = (DQ1) * (2.0 ** DQ2)
      WRITE (6,18)  DET
   18 FORMAT (26HODISPERSION DETERMINANT = E14.4)
      H1LOGS = H1LOGS + ((ENG - 1.0) * ALOG (DET))
      FA1S = FA1S + (1.0 / (ENG - 1.0))
      GA1S = GA1S + (1.0 / ((ENG - 1.0) ** 2))
   19 WRITE (6,9)
C
C
      EN = N
      DO 20  J = 1, M
      DO 20  K = 1, M
      A(J,K) = C(J,K) - T(J) * T(K) / EN
      D(J,K) = A(J,K)
   20 C(J,K) = B(J,K) / (EN - EKG)
      DO 21  J = 1, M
      T(J) = T(J) / EN
   21 U(J) = SQRT (C(J,J))
      WRITE (6,9)
      WRITE (6,22)
   22 FORMAT (23HOMEANS FOR TOTAL SAMPLE)
      WRITE (6,16)  (T(J), J = 1, M)
```

```
      KGT = KG + 1
      WRITE (7,30)  KGT, (T(J), J = 1, M)
      WRITE (6,23)
   23 FORMAT (35HOPOOLED-SAMPLES STANDARD DEVIATIONS)
      WRITE (6,16)  (U(J), J = 1, M)
      WRITE (6,9)
      WRITE (6,9)
      WRITE (6,38)
   38 FORMAT (9HOT MATRIX)
      DO 34  J = 1, M
      WRITE (6,30)  J, (A(J,K), K = J, M)
   34 WRITE (7,30)  J, (A(J,K), K = J, M)
      WRITE (6,9)
      DO 35  J = 1, M
      DO 35  K = 1, M
   35 A(J,K) = A(J,K) - B(J,K)
C
C     A IS NOW THE A (AMONG-GROUPS SSCP) MATRIX.  B IS NOW THE W
C    (WITHIN-GROUPS SSCP) MATRIX.  C IS NOW THE POOLED-GROUPS
C    DISPERSION ESTIMATE.
C
      WRITE (6,28)
   28 FORMAT (9HOA MATRIX)
      DO 29  J = 1, M
   29 WRITE (6,30)  J, (A(J,K), K = J, M)
      WRITE (6,9)
C
      WRITE (6,31)
   31 FORMAT (9HOW MATRIX)
      DO 32  J = 1, M
      WRITE (6,30)  J, (B(J,K), K = J, M)
   32 WRITE (7,30)  J, (B(J,K), K = J, M)
      WRITE (6,9)
C
      DO 72  J = 1, M
      DO 72  K = 1, M
   72 Q(J,K) = C(J,K)
      IDGT = 0
      CALL LUDATF (Q,QA,M,50,IDGT,DQ1,DQ2,IQP,QE,WQ,IER)
      DET = (DQ1) * (2.0 ** DQ2)
      DO 77  J = 1, M
      DO 77  K = 1, M
   77 Q(J,K) = C(J,K)
      IDGT = 0
      CALL LINV2F (Q,M,50,QA,IDGT,QWORK,IER)
      DO 76  J = 1, M
      DO 76  K = 1, M
   76 C(J,K) = QA(J,K)
```

```
      DO 33  J = 1, M
   33 WRITE (7,30)  J, (C(J,K), K = J, M)
C
      WRITE (6,18)  DET
      H1LOG = (EN - EK) * ALOG (DET)
      XMM = H1LOG - H1LOGS
      F1 = 0.5 * (EK - 1.0) * EM * (EM + 1.0)
      A1A = (FA1S - (1.0 / (EN - EK))) * ((2.0 * (EM * EM)) + (3.0 *
     C      EM) - 1.0)
      A1 = A1A / (6.0 * (EK - 1.0) * (EM + 1.0))
      A2 = (GA1S - (1.0 / (EN - EK) ** 2)) * ((EM - 1.0) * (EM + 2.0))
     C     / (6.0 * (EK - 1.0))
      DIF = A2 - A1 * A1
      IF (DIF)  24, 24, 25
   24 F2 = (F1 + 2.0) / (A1 * A1 - A2)
      B1 = F2 / (1.0 - A1 + (2.0 / F2))
      F = (F2 * XMM) / (F1 * (B1 - XMM))
      GO TO 45
   25 F2 = (F1 + 2.0) / DIF
      B1 = F1 / (1.0 - A1 - (F1 / F2))
      F = XMM / B1
   45 NDF1 = F1
      NDF2 = F2
      WRITE (6,26)  XMM, F
   26 FORMAT (47H0FOR TEST OF H1 (EQUALITY OF DISPERSIONS), M = F10.3,
     C   9H AND F = F10.3)
      WRITE (6,27)  NDF1, NDF2
   27 FORMAT (15H0FOR F, NDF1 = I3, 12H AND NDF2 = I9)
      CALL MDFD (F,NDF1,NDF2,PROB,IER)
      WRITE (6,80)  PROB
   80 FORMAT (58H0FOR F-TEST, LEFT HAND AREA UNDER CURVE FOR GIVEN NDF-S
     C = F6.4)
      WRITE (6,9)
C
      N1 = EKG - 1.0
      N2 = EN - EKG
      WRITE (6,9)
      WRITE (6,40)  N1, N2
   40 FORMAT (34H0UNIVARIATE F-RATIOS, WITH NDF1 = I3,12H AND NDF2 = I6)
      WRITE (6,9)
      WRITE (6,41)
   41 FORMAT (95H0VARIABLE  AMONG MEAN SQ     WITHIN MEAN SQ     F-RATIO
     C      F-SIGNIFICANCE LEVEL      ETA SQUARE)
      DO 42  J = 1, M
      ETASQ = A(J,J) / (A(J,J) + B(J,J))
      AMS = A(J,J) / (EKG - 1.0)
      WMS = B(J,J) / (EN - EKG)
      F = AMS / WMS
```

```
      CALL MDFD (F,N1,N2,PROB,IER)
      PROB = 1.0 - PROB
   42 WRITE (6,43)  J, AMS, WMS, F, PROB, ETASQ
   43 FORMAT (3X,I3,4X,F10.3,10X,F10.3,8X,F7.3,14X,F6.4,12X,F6.4)
      WRITE (6,9)
C
      DO 73  J = 1, M
      DO 73  K = 1, M
   73 Q(J,K) = B(J,K)
      IDGT = 0
      CALL LUDATF (Q,QA,M,50,IDGT,DQ1,DQ2,IQP,QE,WQ,IER)
      DQ1 = DLOG(DQ1)
      DQ2 = DQ2 * DLOG(2.0D0)
C   DQ1*2.0**DQ2 = DETW WHICH IS THE DETERMINANT OF THE
C   POOLED-SAMPLES DEVIATION SSCP MATRIX, W.
      DO 74  J = 1, M
      DO 74  K = 1, M
   74 Q(J,K) = D(J,K)
      IDGT = 0
      CALL LUDATF (Q,QA,M,50,IDGT,DQ3,DQ4,IQP,QE,WQ,IER)
      DQ3 = DLOG(DQ3)
      DQ4 = DQ4 * DLOG(2.0D0)
C   DQ3*2.0**DQ4 = DETT WHICH IS THE DETERMINANT OF THE
C   TOTAL SAMPLE DEVIATION SSCP MATRIX, T.
      XL = DEXP(DQ1 + DQ2 - DQ3 - DQ4)
      YL = 1.0 - XL
      WRITE (6,9)
      WRITE (6,46)  XL, YL
   46 FORMAT (16H0WILKS LAMBDA =  F7.4,47H   GENERALIZED CORRELATION RAT
     CIO, ETA SQUARE = F7.4)
      IF (M - 2)  47, 47, 49
   47 IF (KG - 3)  48, 48, 49
   48 YL = XL
      F1 = 2.0
      F2 = EN - 3.0
      GO TO 50
   49 SL = SQRT (((EM * EM) * ((EKG - 1.0) ** 2) - 4.0) / ((EM * EM) +
     2  ((EKG - 1.0) ** 2) - 5.0))
      YL = XL ** (1.0 / SL)
      PL = (EN - 1.0) - ((EM + EKG) / 2.0)
      QL = - ((EM * (EKG - 1.0)) - 2.0) / 4.0
      RL = (EM * (EKG - 1.0)) / 2.0
      F1 = 2.0 * RL
      F2 = (PL * SL) + (2.0 * QL)
   50 N1 = F1
      N2 = F2
      F = ((1.0 - YL) / YL) * (F2 / F1)
      WRITE (6,51)  F
```

```
   51 FORMAT (43HOF-RATIO FOR H2, OVERALL DISCRIMINATION, = F10.3)
      WRITE (6,27)  N1, N2
      CALL MDFD (F,N1,N2,PROB,IER)
      WRITE (6,80)  PROB
      WRITE (6,9)
      WRITE (6,9)
      WRITE (6,52)
   52 FORMAT (4H1END)
      STOP
      END
//LINK.SYSLIB DD
//   DD
//   DD DSN=SYS3.IMSL.DP,DISP=SHR
//LINK.HUBER DD DSN=SYS3.IMSL.SP,DISP=SHR
//LINK.SYSIN DD *
 INCLUDE HUBER(MDFD)
//GO.FT06F001 DD SYSOUT=A
//GO.FT07F001 DD SYSOUT=B
//GO.SYSIN DD *
```

MANOVA. A MODIFIED COOLEY-LOHNES PROGRAM

THIS RUN TESTS THE NEEDED EDUCATIONAL LEVEL CODING DATA.

THE FIRST GROUP IS THE INTERVIEW INFORMATION.
THE SECOND GROUP IS THE DELPHI QUESTIONNAIRE.

ANALYSIS FOR 42 VARIABLES AND 2 GROUPS

GROUP 1, NG = 103

MEANS FOR GROUP 1

1.738	1.495	1.320	1.854	1.573	2.427	2.379	1.961	1.728	1.544
1.447	2.252	2.155	2.146	1.990	2.379	2.068	1.816	1.728	2.485
2.165	3.204	2.670	2.427	2.282	2.272	2.447	2.155	1.874	2.175
2.524	1.777	1.709	2.816	2.194	2.563	2.476	2.427	2.117	3.010
3.078	2.835								

STANDARD DEVIATIONS

0.804	0.803	0.675	0.954	0.892	1.151	1.147	1.019	0.952	0.751
0.710	0.871	1.127	0.994	0.975	1.077	0.993	0.916	0.888	1.028
1.197	0.890	1.232	1.234	1.175	1.173	1.210	1.073	1.054	1.124
1.110	1.154	0.966	0.978	1.121	1.218	1.187	1.117	1.140	1.043
1.064	1.299								

DISPERSION DETERMINANT = 0.2083E-23

GROUP 2, NG = 259

MEANS FOR GROUP 2

1.618	1.340	1.205	1.942	1.521	2.124	1.788	1.792	1.764	1.452
1.483	2.000	2.050	2.012	1.981	2.274	2.104	1.919	1.873	2.672
2.548	2.803	2.799	2.417	1.934	2.058	2.324	2.637	2.259	2.328
2.089	1.958	1.826	2.158	2.629	2.544	2.189	2.131	1.691	3.236
3.459	3.533								

STANDARD DEVIATIONS

0.775	0.677	0.564	0.831	0.784	0.911	0.879	0.855	0.886	0.694
0.701	0.787	0.868	0.847	0.814	0.801	0.793	0.781	0.770	0.847
0.885	0.809	0.960	0.896	0.772	0.826	0.851	0.830	0.772	0.770
0.934	0.882	0.819	0.841	0.894	0.894	0.923	0.947	0.852	0.728
0.605	0.586								

DISPERSION DETERMINANT = 0.4137E-22

```
------------------------------------------------------------------------------------------------------------

MEANS FOR TOTAL SAMPLE
      1.652      1.384      1.238      1.917      1.536      2.210      1.956      1.840      1.754      1.478
      1.472      2.072      2.080      2.050      1.983      2.304      2.094      1.890      1.831      2.619
      2.439      2.917      2.762      2.420      2.033      2.119      2.359      2.500      2.149      2.285
      2.213      1.906      1.793      2.345      2.506      2.550      2.271      2.215      1.812      3.171
      3.351      3.334

POOLED-SAMPLES STANDARD DEVIATIONS
      0.784      0.715      0.598      0.868      0.816      0.985      0.963      0.905      0.905      0.710
      0.703      0.812      0.948      0.891      0.863      0.888      0.854      0.821      0.805      0.902
      0.984      0.833      1.044      1.003      0.905      0.938      0.966      0.906      0.861      0.885
      0.987      0.967      0.864      0.882      0.964      0.997      1.005      0.998      0.943      0.829
      0.763      0.851

------------------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------------------

T MATRIX
ROW   1    0.2221438E 03 0.1343813E 03 0.9493384E 02 0.1195581E 03 0.3552490E 02
           0.4245313E 02 0.4343115E 02 0.3281226E 02 0.2402222E 02 0.6215576E 01
           0.4519531E 01 0.6504980E 02 0.1709399E 02 0.5026538E 02 0.5191162E 02
           0.6528735E 02 0.4983447E 02 0.4907739E 02 0.4376807E 02 0.5596704E 02
           0.3034277E 02 0.5558105E 01 0.4606641E 02 0.4290625E 02 0.4417700E 02
           0.5096704E 02 0.4224878E 02 0.3100000E 02 0.3279565E 02 0.3685083E 02
           0.9080127E 02 0.8716577E 02 0.8989526E 02 0.1005083E 03 0.5169629E 02
           0.4626538E 02 0.5111060E 02 0.5514941E 02 0.5133154E 02 0.4158032E 02
           0.3820459E 02 0.4611621E 02
ROW   2    0.1856272E 03 0.1289780E 03 0.1195195E 03 0.3250830E 02 0.5681787E 02
           0.6114380E 02 0.2327075E 02 0.2217407E 02 0.8572021E 01 0.5339844E 01
           0.5401660E 02 0.2486475E 02 0.4708862E 02 0.4430396E 02 0.2476245E 02
           0.5094482E 02 0.4335913E 02 0.4242285E 02 0.2298901E 02 0.1794775E 02
          -0.1548047E 02 0.3002222E 02 0.3663550E 02 0.3939233E 02 0.4548901E 02
           0.2908301E 02 0.2550000E 02 0.3626538E 02 0.2545044E 02 0.6443384E 02
           0.4705542E 02 0.5579858E 02 0.7000293E 02 0.4173218E 02 0.7588623E 01
           0.2637036E 02 0.4504980E 02 0.2111060E 02 0.1619360E 02 0.1823486E 02
           0.1953882E 02
ROW   3    0.1295691E 03 0.8412720E 02 0.3591162E 02 0.4494482E 02 0.5080127E 02
           0.1677905E 02 0.2114380E 02 0.9900635E 01 0.9375732E 01 0.4782324E 02
           0.2511060E 02 0.3472388E 02 0.3342554E 02 0.1486743E 02 0.2892285E 02
           0.3250293E 02 0.3349194E 02 0.1778467E 02 0.2422656E 02-0.9872803E 01
           0.1443115E 02 0.2688965E 02 0.3214941E 02 0.3978467E 02 0.2211621E 02
           0.1200000E 02 0.2217139E 02 0.1853052E 02 0.4170723E 02 0.4207739E 02
           0.4781787E 02 0.4830396E 02 0.3552490E 02-0.2761230E 00 0.1571826E 02
           0.2646973E 02 0.1215479E 02 0.1827075E 02 0.1082886E 02 0.1625415E 02
ROW   4    0.2715139E 03 0.4807739E 02 0.4829858E 02 0.4467407E 02 0.3719360E 02
           0.3462451E 02 0.1337158E 01 0.2171387E 01 0.8215479E 02 0.2840332E 02
           0.3349194E 02 0.3250293E 02 0.4411621E 02 0.5381787E 02 0.3968530E 02
           0.4094482E 02 0.3556372E 02 0.3617700E 02 0.9513916E 01 0.6187305E 02
           0.5559692E 02 0.4499463E 02 0.6056372E 02 0.3077368E 02 0.4300000E 02
           0.3747534E 02 0.4153613E 02 0.9038135E 02 0.7118237E 02 0.8878467E 02
           0.8535913E 02 0.7216577E 02 0.3049194E 02 0.3812158E 02 0.5846411E 02
           0.5436475E 02 0.4913818E 02 0.5452490E 02 0.6302783E 02
ROW   5    0.2400332E 03 0.1492708E 03 0.1225747E 03 0.1040830E 03 0.1066963E 03
           0.6328735E 02 0.6235913E 02 0.4306641E 02 0.1054587E 03 0.7635376E 02
           0.7521558E 02 0.5604980E 02 0.5177905E 02 0.3443652E 02 0.3169067E 02
           0.5995581E 02 0.8679028E 02 0.2807739E 02 0.1020886E 03 0.9454150E 02
           0.7656909E 02 0.7995581E 02 0.8633154E 02 0.8800000E 02 0.7406079E 02
           0.9180127E 02-0.2026514E 02-0.1778809E 01 0.1193604E 01 0.1201123E 02
          -0.3071777E 01 0.9353760E 01-0.5192871E 00-0.1080103E 02 0.9442139E 01
           0.4277368E 02 0.2493945E 02 0.3215479E 02
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ROW   6   0.3560444E 03 0.2943591E 03 0.2381770E 03 0.2116853E 03 0.1296797E 03
          0.1320996E 03 0.5454150E 02 0.1509116E 03 0.1292212E 03 0.1212598E 03
          0.8890625E 02 0.1178621E 03 0.8339795E 02 0.8880664E 02 0.1209724E 03
          0.1486189E 03 0.7229858E 02 0.2060554E 03 0.1900886E 03 0.1574807E 03
          0.1679724E 03 0.1787073E 03 0.1440000E 03 0.1326631E 03 0.1333757E 03
         -0.1616553E 02-0.3286182E 02-0.2925391E 02 0.2175708E 02-0.2341968E 02
         -0.1277881E 02-0.3157446E 02-0.2537549E 02 0.1276367E 01 0.8398364E 02
          0.6133716E 02 0.6359692E 02
ROW   7   0.3592930E 03 0.2144365E 03 0.1660664E 03 0.1346465E 03 0.1255581E 03
          0.5814941E 02 0.1392820E 03 0.1067957E 03 0.9973486E 02 0.8386206E 02
          0.1115029E 03 0.7123218E 02 0.7530396E 02 0.1129006E 03 0.1330278E 03
          0.7967407E 02 0.1621990E 03 0.1747183E 03 0.1595305E 03 0.1669006E 03
          0.1617461E 03 0.1150000E 03 0.1123870E 03 0.1225525E 03 0.1040332E 02
         -0.2150269E 02-0.3231470E 02 0.3452490E 02-0.2391138E 02-0.1520435E 02
         -0.1466846E 02-0.1155225E 02 0.1999463E 02 0.6174048E 02 0.4461328E 02
          0.4234814E 02
ROW   8   0.2967073E 03 0.2487405E 03 0.1517183E 03 0.1593979E 03 0.3416577E 02
          0.1176465E 03 0.8488403E 02 0.8603882E 02 0.6362451E 02 0.9344775E 02
          0.7659131E 02 0.7522656E 02 0.8788965E 02 0.1244753E 03 0.6619360E 02
          0.1632212E 03 0.1623538E 03 0.1419229E 03 0.1288896E 03 0.1438289E 03
          0.1300000E 03 0.1256521E 03 0.1465029E 03 0.1233716E 02 0.7552490E 01
          0.7983643E 01 0.2902783E 02 0.1320557E 01 0.6884033E 01 0.2701660E 01
          0.7497314E 01 0.2110498E 02 0.6793384E 02 0.3434814E 02 0.4238696E 02
ROW   9   0.2951189E 03 0.1675332E 03 0.1660415E 03 0.3039233E 02 0.1081299E 03
          0.6142554E 02 0.6152490E 02 0.3904443E 02 0.6135913E 02 0.4916577E 02
          0.5500293E 02 0.6207202E 02 0.1160913E 03 0.4662451E 02 0.1278564E 03
          0.1223704E 03 0.1229504E 03 0.1075720E 03 0.1129614E 03 0.1275000E 03
          0.1262764E 03 0.1443232E 03-0.8068848E 01 0.9641113E 01 0.1556079E 02
          0.1973218E 02 0.1399194E 02-0.5074463E 01-0.9060059E 00-0.4822998E 01
          0.2728198E 02 0.6224316E 02 0.3822388E 02 0.4374878E 02
ROW  10   0.1823232E 03 0.1432791E 03 0.1657471E 02 0.7714111E 02 0.4639795E 02
          0.4186743E 02 0.3243115E 02 0.4375146E 02 0.4211621E 02 0.4415210E 02
          0.3995044E 02 0.6701392E 02 0.3833716E 02 0.7609961E 02 0.8135913E 02
          0.9626538E 02 0.7745044E 02 0.8387305E 02 0.7050000E 02 0.8319360E 02
          0.9177637E 02-0.1079834E 02 0.1248779E 01 0.2842773E 01 0.1226245E 02
          0.5444336E 00-0.2610205E 02 0.3165771E 01 0.6723877E 01 0.1749731E 02
          0.2837036E 02 0.1030664E 02 0.6174072E 01
ROW  11   0.1782239E 03 0.1671826E 02 0.7830127E 02 0.4549731E 02 0.4783447E 02
          0.3703882E 02 0.4593945E 02 0.5089526E 02 0.5781494E 02 0.4718799E 02
          0.7289233E 02 0.4017139E 02 0.7462451E 02 0.8419897E 02 0.9233154E 02
          0.7968799E 02 0.7659131E 02 0.8050000E 02 0.9149194E 02 0.9534546E 02
         -0.1737280E 02 0.4060791E 01 0.4282227E 00 0.8953125E 01 0.1155542E 02
         -0.1500269E 02 0.6707275E 01 0.1115479E 02 0.1912158E 02 0.3671289E 02
          0.2400830E 02 0.2884277E 02
ROW  12   0.2421328E 03 0.1099172E 03 0.7270728E 02 0.7443115E 02 0.6209961E 02
          0.6455811E 02 0.4687305E 02 0.4738135E 02 0.7691162E 02 0.8158032E 02
          0.3815479E 02 0.7117700E 02 0.6308301E 02 0.5913818E 02 0.6091162E 02
          0.7766309E 02 0.5400000E 02 0.5912158E 02 0.7360229E 02 0.8446973E 02
          0.7244214E 02 0.5338696E 02 0.9802222E 02 0.4685645E 02 0.5270728E 02
          0.2396143E 02 0.4239795E 02 0.6288403E 02 0.5554712E 02 0.6087866E 02
          0.5530957E 02
ROW  13   0.3246770E 03 0.1295581E 03 0.1234807E 03 0.5918799E 02 0.9627637E 02
          0.7120459E 02 0.7188696E 02 0.9905542E 02 0.1842625E 03 0.8140332E 02
          0.1458896E 03 0.1308232E 03 0.1160388E 03 0.1165554E 03 0.1405857E 03
          0.1335000E 03 0.1316741E 03 0.1497488E 03-0.1316846E 02-0.3027612E 02
         -0.2291170E 02 0.1898633E 02 0.1133984E 02 0.7058105E 01-0.1185059E 02
         -0.4248535E 01-0.1555225E 02 0.9303320E 02 0.5782617E 02 0.7130664E 02
ROW  14   0.2871050E 03 0.2512986E 03 0.1555305E 03 0.1793096E 03 0.1569890E 03
          0.1640332E 03 0.1528621E 03 0.1260940E 03 0.5749194E 02 0.1892764E 03
          0.1384421E 03 0.1004033E 03 0.1008621E 03 0.1625361E 03 0.1280000E 03
          0.7531494E 02 0.9987866E 02 0.2217139E 02 0.2269067E 02 0.5729492E 01
          0.2378467E 02-0.1509937E 02 0.1610498E 02 0.4127197E 01 0.1512158E 02
         -0.6186523E 00 0.7791724E 02 0.6068530E 02 0.5798364E 02
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ROW  15    0.2679006E 03 0.1698232E 03 0.1865637E 03 0.1633372E 03 0.1679890E 03
           0.1617129E 03 0.1436355E 03 0.5150293E 02 0.1695747E 03 0.1295195E 03
           0.9219897E 02 0.9371289E 02 0.1551548E 03 0.1250000E 03 0.8389526E 02
           0.1127073E 03 0.1127637E 02 0.3043652E 02 0.1275708E 02 0.1507202E 02
           0.4033203E 01 0.2429858E 02 0.7624512E 01 0.1529297E 02 0.6873047E 01
           0.7602783E 02 0.7410498E 02 0.8200562E 02
ROW  16    0.2845747E 03 0.1826687E 03 0.1421548E 03 0.1365361E 03 0.1749338E 03
           0.1066853E 03 0.5511621E 02 0.1451328E 03 0.1278123E 03 0.8835376E 02
           0.8893384E 02 0.1364973E 03 0.8400000E 02 0.6059131E 02 0.8370166E 02
           0.5460229E 02 0.9333154E 02 0.4679028E 02 0.5901660E 02 0.6392334E 01
           0.4553052E 02 0.3022119E 02 0.1929858E 02 0.3366309E 02 0.6316040E 02
           0.7840894E 02 0.8823218E 02
ROW  17    0.2628066E 03 0.1857571E 03 0.1757295E 03 0.1689614E 03 0.1290664E 03
           0.4281787E 02 0.1760774E 03 0.1637239E 03 0.1208730E 03 0.1259614E 03
           0.1507903E 03 0.1170000E 03 0.9292822E 02 0.1173262E 03 0.2276807E 02
           0.2919360E 02 0.7044434E 01 0.2225977E 02-0.1318774E 02-0.5690430E 01
          -0.1520435E 02 0.2674072E 01-0.2061304E 02 0.6417700E 02 0.6507202E 02
           0.7163550E 02
ROW  18    0.2435803E 03 0.2152598E 03 0.1427515E 03 0.9956909E 02 0.2168530E 02
           0.1384973E 03 0.1277957E 03 0.8932617E 02 0.9775146E 02 0.1083647E 03
           0.1080000E 03 0.9296704E 02 0.1063813E 03 0.2250830E 02 0.2524316E 02
           0.1171289E 02 0.1681226E 02 0.8221191E 01 0.1989014E 01-0.1171143E 01
           0.2261890E 02-0.4513672E 01 0.4385083E 02 0.4603320E 02 0.5937036E 02
ROW  19    0.2347212E 03 0.1357461E 03 0.1087930E 03 0.2794482E 02 0.1325083E 03
           0.1206133E 03 0.8902222E 02 0.9724609E 02 0.1119063E 03 0.1155000E 03
           0.9709961E 02 0.1013564E 03 0.1097534E 02 0.2727075E 02 0.2036206E 02
           0.1706372E 02 0.2283716E 02 0.7533203E 01 0.1051392E 02 0.3214380E 02
           0.1154150E 02 0.5244775E 02 0.5640063E 02 0.6938965E 02
ROW  20    0.2953923E 03 0.1516133E 03 0.6356372E 02 0.1782156E 03 0.1419448E 03
           0.9457471E 02 0.1003923E 03 0.1655581E 03 0.1550000E 03 0.1105857E 03
           0.1272654E 03 0.1935376E 02 0.5103882E 02 0.2040894E 02 0.2665210E 02
           0.3776245E 02 0.2086206E 02-0.6408691E 00 0.5734863E 01-0.9226074E 00
           0.1086355E 03 0.1094146E 03 0.1481272E 03
ROW  21    0.3591631E 03 0.1141770E 03 0.1777737E 03 0.1672378E 03 0.1357295E 03
           0.1471133E 03 0.1719006E 03 0.1805000E 03 0.1522820E 03 0.1677598E 03
          -0.1582031E 02 0.1993384E 02 0.7942139E 01 0.1709692E 02 0.4662158E 02
           0.2559399E 02-0.4418945E-01 0.2374048E 02 0.9867432E 01 0.1427681E 03
           0.1092183E 03 0.1408538E 03
ROW  22    0.2615139E 03 0.9887305E 02 0.8659692E 02 0.8699463E 02 0.7956372E 02
           0.1067737E 03 0.6000000E 02 0.3947534E 02 0.6353613E 02 0.6738135E 02
           0.8182373E 01 0.1078467E 02 0.5535913E 02 0.3016577E 02 0.5649194E 02
           0.7412158E 02 0.7246411E 02 0.5936475E 02 0.8113818E 02 0.6952490E 02
           0.7402783E 02
ROW  23    0.3935691E 03 0.3111106E 03 0.2128508E 03 0.2222156E 03 0.2878840E 03
           0.2130000E 03 0.1498289E 03 0.1884697E 03 0.1229297E 02 0.8922852E 01
          -0.4817627E 01 0.2869629E 02-0.2852466E 02 0.8276367E 01-0.1071802E 02
          -0.2446948E 02-0.2115454E 02 0.1217295E 03 0.8717139E 02 0.8674609E 02
ROW  24    0.3621770E 03 0.2539614E 03 0.2629448E 03 0.2514146E 03 0.1740000E 03
           0.1503262E 03 0.1727515E 03 0.2066870E 02 0.1927637E 02 0.1491943E 01
           0.4951392E 02-0.2883960E 02-0.1557861E 01 0.8508301E 00-0.2775122E 02
          -0.1044751E 02 0.9596704E 02 0.6467407E 02 0.7119360E 02
ROW  25    0.3036023E 03 0.2745747E 03 0.2166907E 03 0.1030000E 03 0.1212100E 03
           0.1355857E 03 0.3244775E 02 0.2012720E 02 0.1748633E 02 0.7285645E 02
          -0.2066162E 01-0.1259668E 02 0.2175146E 02 0.1341455E 02 0.2225415E 02
           0.5694482E 02 0.3679028E 02 0.3298901E 02
ROW  26    0.3198923E 03 0.2235581E 03 0.1265000E 03 0.1385857E 03 0.1427654E 03
           0.2385376E 02 0.1603882E 02 0.1490894E 02 0.5815210E 02-0.1473755E 02
          -0.2063794E 02 0.1035913E 02 0.3734863E 01 0.1107739E 02 0.6663550E 02
           0.4091455E 02 0.4362720E 02
ROW  27    0.3373149E 03 0.1770000E 03 0.1396079E 03 0.1660112E 03 0.8348145E 01
           0.1120996E 02-0.6066162E 01 0.3011060E 02 0.4281982E 01 0.2953613E 02
           0.2580664E 02 0.1498901E 02 0.2041992E 02 0.1077349E 03 0.8439233E 02
           0.9254712E 02
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ROW  28    0.3125000E 03 0.2310000E 03 0.2065000E 03-0.2250000E 02 0.1000000E 01
          -0.5500000E 01-0.3500000E 01 0.4450000E 02 0.1150000E 02-0.5000000E 01
           0.2000000E 01-0.1500000E 02 0.1090000E 03 0.9150000E 02 0.1205000E 03
ROW  29    0.2779448E 03 0.1996355E 03-0.1048608E 02 0.2007202E 02 0.1818799E 02
           0.1635376E 02 0.6270166E 02 0.7314941E 01 0.4381348E 01 0.1336475E 02
          -0.4856201E 01 0.8075146E 02 0.7405542E 02 0.9795044E 02
ROW  30    0.2836936E 03 0.1909131E 02 0.3367407E 02 0.2133984E 02 0.3943384E 02
           0.4393115E 02 0.3337866E 02 0.2411621E 02 0.9806641E 01 0.2134814E 02
           0.8535913E 02 0.5886475E 02 0.7657202E 02
ROW  31    0.3646216E 03 0.2172322E 03 0.1899531E 03 0.2134116E 03 0.7407471E 02
           0.1156714E 03 0.1221548E 03 0.1254089E 03 0.1094641E 03 0.1581226E 02
           0.1698633E 02 0.6262451E 01
ROW  32    0.3388066E 03 0.2339558E 03 0.1807405E 03 0.9418799E 02 0.9669067E 02
           0.1042046E 03 0.8832617E 02 0.9661328E 02 0.3182324E 02 0.5192822E 02
           0.7336475E 02
ROW  33    0.2694614E 03 0.1778979E 03 0.1189146E 03 0.9122949E 02 0.1003040E 03
           0.9716040E 02 0.9691162E 02 0.3484546E 02 0.3831226E 02 0.5106909E 02
ROW  34    0.3118372E 03 0.6680957E 02 0.7428467E 02 0.9816040E 02 0.8106641E 02
           0.9848071E 02 0.4159131E 02 0.3814648E 02 0.2421826E 02
ROW  35    0.3484890E 03 0.1744006E 03 0.1584587E 03 0.1425691E 03 0.1253757E 03
           0.8065747E 02 0.1097986E 03 0.1408315E 03
ROW  36    0.3576050E 03 0.2391272E 03 0.1521216E 03 0.1833813E 03 0.8091724E 02
           0.8418530E 02 0.8048364E 02
ROW  37    0.3694697E 03 0.2608840E 03 0.2124089E 03 0.5021558E 02 0.5861890E 02
           0.6324316E 02
ROW  38    0.3651936E 03 0.1856521E 03 0.4864111E 02 0.6063550E 02 0.6592822E 02

ROW  39    0.3332266E 03 0.6364648E 02 0.6385645E 02 0.6372949E 02
ROW  40    0.2513813E 03 0.1522488E 03 0.1652764E 03
ROW  41    0.2204448E 03 0.2015498E 03
ROW  42    0.2965554E 03
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A MATRIX
ROW   1    0.1062988E 01 0.1375000E 01 0.1024551E 01-0.7766113E 00 0.4562988E 00
           0.2687256E 01 0.5230713E 01 0.1501465E 01-0.3217773E 00 0.8137207E 00
          -0.3188477E 00 0.2234131E 01 0.9304199E 00 0.1186523E 01 0.8471680E-01
           0.9248047E 00-0.3210449E 00-0.9152832E 00-0.1278564E 01-0.1649658E 01
          -0.3391846E 01 0.3547363E 01-0.1144775E 01 0.9008789E-01 0.3072998E 01
           0.1893555E 01 0.1082275E 01-0.4263916E 01-0.3406738E 01-0.1358154E 01
           0.3854004E 01-0.1600586E 01-0.1040039E 01 0.5816895E 01-0.3851807E 01
           0.1652832E 00 0.2536133E 01 0.2618896E 01 0.3764893E 01-0.1998535E 01
          -0.3379150E 01-0.6176758E 01
ROW   2    0.1779037E 01 0.1325394E 01-0.1004395E 01 0.5905304E 00 0.3476807E 01
           0.6766846E 01 0.1942383E 01-0.4162598E 00 0.1052856E 01-0.4125214E 00
           0.2890381E 01 0.1203613E 01 0.1534912E 01 0.1096191E 00 0.1196533E 01
          -0.4157715E 00-0.1184082E 01-0.1653809E 01-0.2134277E 01-0.4387939E 01
           0.4589111E 01-0.1480713E 01 0.1166992E 00 0.3975342E 01 0.2449463E 01
           0.1400146E 01-0.5516113E 01-0.4407227E 01-0.1756836E 01 0.4986084E 01
          -0.2070557E 01-0.1345703E 01 0.7525391E 01-0.4982910E 01 0.2141113E 00
           0.3280762E 01 0.3388184E 01 0.4870605E 01-0.2585449E 01-0.4371826E 01
          -0.7990723E 01
ROW   3    0.9873657E 00-0.7482147E 00 0.4397736E 00 0.2589844E 01 0.5041504E 01
           0.1447021E 01-0.3097534E 00 0.7842712E 00-0.3073120E 00 0.2153320E 01
           0.8967285E 00 0.1143311E 01 0.8178711E-01 0.8913574E 00-0.3095703E 00
          -0.8818207E 00-0.1231873E 01-0.1590088E 01-0.3269043E 01 0.3418701E 01
          -0.1103271E 01 0.8691406E-01 0.2961670E 01 0.1824707E 01 0.1042969E 01
          -0.4109619E 01-0.3283463E 01-0.1308838E 01 0.3714600E 01-0.1542526E 01
          -0.1002289E 01 0.5606445E 01-0.3712402E 01 0.1596680E 00 0.2444092E 01
           0.2524170E 01 0.3628418E 01-0.1926514E 01-0.3256836E 01-0.5953369E 01
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ROW   4    0.5668945E 00-0.3334961E 00-0.1962891E 01-0.3820313E 01-0.1096680E 01
           0.2348633E 00-0.5944824E 00 0.2326660E 00-0.1631836E 01-0.6799316E 00
          -0.8664551E 00-0.6201172E-01-0.6755371E 00 0.2346191E 00 0.6682129E 00
           0.9335938E 00 0.1204590E 01 0.2477051E 01-0.2590820E 01 0.8359375E 00
          -0.6591797E-01-0.2244385E 01-0.1383057E 01-0.7905273E 00 0.3113525E 01
           0.2488037E 01 0.9916992E 00-0.2815186E 01 0.1168701E 01 0.7595215E 00
          -0.4248779E 01 0.2812744E 01-0.1210938E 00-0.1852295E 01-0.1913086E 01
          -0.2750000E 01 0.1459473E 01 0.2467529E 01 0.4510986E 01
ROW   5    0.1960144E 00 0.1154053E 01 0.2246338E 01 0.6447754E 00-0.1381836E 00
           0.3493958E 00-0.1370697E 00 0.9594727E 00 0.3996582E 00 0.5092773E 00
           0.3637695E-01 0.3969727E 00-0.1381836E 00-0.3930664E 00-0.5493164E 00
          -0.7087402E 00-0.1456543E 01 0.1523193E 01-0.4914551E 00 0.3857422E-01
           0.1319580E 01 0.8129883E 00 0.4645996E 00-0.1831299E 01-0.1463379E 01
          -0.5832520E 00 0.1655029E 01-0.6872559E 00-0.4467773E 00 0.2498291E 01
          -0.1654297E 01 0.7104492E-01 0.1089111E 01 0.1124756E 01 0.1616943E 01
          -0.8583984E 00-0.1451172E 01-0.2652832E 01
ROW   6    0.6793945E 01 0.1322388E 02 0.3796387E 01-0.8127441E 00 0.2057373E 01
          -0.8061523E 00 0.5648193E 01 0.2352295E 01 0.2999512E 01 0.2145996E 00
           0.2338379E 01-0.8120117E 00-0.2313477E 01-0.3231934E 01-0.4170410E 01
          -0.8574951E 01 0.8968018E 01-0.2893799E 01 0.2280273E 00 0.7768311E 01
           0.4786621E 01 0.2735840E 01-0.1077930E 02-0.8612549E 01-0.3433350E 01
           0.9743896E 01-0.4046387E 01-0.2629639E 01 0.1470581E 02-0.9737305E 01
           0.4184570E 00 0.6411377E 01 0.6621094E 01 0.9518066E 01-0.5052734E 01
          -0.8542969E 01-0.1561523E 02
ROW   7    0.2573926E 02 0.7388916E 01-0.1582031E 01 0.4004639E 01-0.1569092E 01
           0.1099390E 02 0.4579346E 01 0.5837891E 01 0.4179688E 00 0.4551514E 01
          -0.1580322E 01-0.4502930E 01-0.6290527E 01-0.8117432E 01-0.1668994E 02
           0.1745557E 02-0.5632813E 01 0.4438477E 00 0.1512085E 02 0.9316895E 01
           0.5325439E 01-0.2098071E 02-0.1676343E 02-0.6682373E 01 0.1896558E 02
          -0.7875732E 01-0.5118164E 01 0.2862378E 02-0.1895264E 02 0.8144531E 00
           0.1247925E 02 0.1288770E 02 0.1852637E 02-0.9834961E 01-0.1662817E 02
          -0.3039404E 02
ROW   8    0.2121094E 01-0.4543457E 00 0.1149414E 01-0.4506836E 00 0.3156006E 01
           0.1314453E 01 0.1675781E 01 0.1198730E 00 0.1306641E 01-0.4536133E 00
          -0.1292725E 01-0.1806152E 01-0.2330322E 01-0.4791260E 01 0.5010986E 01
          -0.1616943E 01 0.1274414E 00 0.4340820E 01 0.2674805E 01 0.1528564E 01
          -0.6023193E 01-0.4812500E 01-0.1918457E 01 0.5444580E 01-0.2261230E 01
          -0.1469238E 01 0.8217285E 01-0.5440918E 01 0.2338867E 00 0.3582275E 01
           0.3699707E 01 0.5318359E 01-0.2823486E 01-0.4773682E 01-0.8725098E 01
ROW   9    0.9716797E-01-0.2463379E 00 0.9643555E-01-0.6757813E 00-0.2817383E 00
          -0.3591309E 00-0.2587891E-01-0.2797852E 00 0.9692383E-01 0.2766113E 00
           0.3864746E 00 0.4990234E 00 0.1025635E 01-0.1072754E 01 0.3461914E 00
          -0.2734375E-01-0.9294434E 00-0.5727539E 00-0.3273926E 00 0.1289307E 01
           0.1030273E 01 0.4104004E 00-0.1165527E 01 0.4838867E 00 0.3144531E 00
          -0.1759277E 01 0.1164795E 01-0.5004883E-01-0.7673340E 00-0.7919922E 00
          -0.1138672E 01 0.6042480E 00 0.1021973E 01 0.1868164E 01
ROW  10    0.6231079E 00-0.2442017E 00 0.1710449E 01 0.7126465E 00 0.9082031E 00
           0.6494141E-01 0.7082520E 00-0.2460938E 00-0.7006836E 00-0.9787598E 00
          -0.1262939E 01-0.2596924E 01 0.2715576E 01-0.8764648E 00 0.6884766E-01
           0.2352539E 01 0.1449463E 01 0.8283691E 00-0.3264404E 01-0.2608154E 01
          -0.1039795E 01 0.2950684E 01-0.1225342E 01-0.7963867E 00 0.4453125E 01
          -0.2948730E 01 0.1267090E 00 0.1941406E 01 0.2004883E 01 0.2882324E 01
          -0.1530273E 01-0.2587402E 01-0.4729248E 01
ROW  11    0.9568787E-01-0.6701660E 00-0.2792969E 00-0.3559570E 00-0.2563477E-01
          -0.2775879E 00 0.9619141E-01 0.2744141E 00 0.3833008E 00 0.4948730E 00
           0.1017090E 01-0.1064209E 01 0.3432617E 00-0.2709961E-01-0.9218750E 00
          -0.5681152E 00-0.3247070E 00 0.1278564E 01 0.1021729E 01 0.4072266E 00
          -0.1156006E 01 0.4797363E 00 0.3118896E 00-0.1744873E 01 0.1155029E 01
          -0.4980469E-01-0.7609863E 00-0.7856445E 00-0.1129395E 01 0.5993652E 00
           0.1013428E 01 0.1852783E 01
ROW  12    0.4695801E 01 0.1956055E 01 0.2493652E 01 0.1787109E 00 0.1944092E 01
          -0.6750488E 00-0.1923096E 01-0.2686768E 01-0.3467041E 01-0.7128418E 01
           0.7455566E 01-0.2405762E 01 0.1896973E 00 0.6458496E 01 0.3979492E 01
           0.2274658E 01-0.8961182E 01-0.7160156E 01-0.2854248E 01 0.8100586E 01
          -0.3363770E 01-0.2186035E 01 0.1222607E 02-0.8095215E 01 0.3479004E 00
           0.5330322E 01 0.5504639E 01 0.7913086E 01-0.4200684E 01-0.7102051E 01
          -0.1298193E 02
```

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ROW  13   0.8146973E 00 0.1038574E 01 0.7421875E-01 0.8095703E 00-0.2814941E 00
         -0.8012695E 00-0.1119141E 01-0.1444336E 01-0.2969727E 01 0.3105225E 01
         -0.1002197E 01 0.7861328E-01 0.2689941E 01 0.1657471E 01 0.9472656E 00
         -0.3732910E 01-0.2982666E 01-0.1188965E 01 0.3374023E 01-0.1401367E 01
         -0.9108887E 00 0.5092529E 01-0.3372070E 01 0.1447754E 00 0.2220215E 01
          0.2292725E 01 0.3296143E 01-0.1749756E 01-0.2958252E 01-0.5407715E 01
ROW  14   0.1323975E 01 0.9472656E-01 0.1032227E 01-0.3586426E 00-0.1021484E 01
         -0.1427002E 01-0.1841064E 01-0.3785645E 01 0.3959229E 01-0.1277832E 01
          0.1005859E 00 0.3429443E 01 0.2113281E 01 0.1208008E 01-0.4758789E 01
         -0.3802490E 01-0.1515625E 01 0.4301758E 01-0.1786377E 01-0.1160889E 01
          0.6492432E 01-0.4298828E 01 0.1845703E 00 0.2830322E 01 0.2923096E 01
          0.4202148E 01-0.2230713E 01-0.3771484E 01-0.6893799E 01
ROW  15   0.6591797E-02 0.7373047E-01-0.2563477E-01-0.7324219E-01-0.1022949E 00
         -0.1318359E 00-0.2712402E 00 0.2832031E 00-0.9155273E-01 0.7324219E-02
          0.2453613E 00 0.1511230E 00 0.8618164E-01-0.3410645E 00-0.2722168E 00
         -0.1086426E 00 0.3078613E 00-0.1281738E 00-0.8300781E-01 0.4645996E 00
         -0.3078613E 00 0.1318359E-01 0.2026367E 00 0.2092285E 00 0.3005371E 00
         -0.1596680E 00-0.2702637E 00-0.4936523E 00
ROW  16   0.8046875E 00-0.2795410E 00-0.7963867E 00-0.1112305E 01-0.1435547E 01
         -0.2951416E 01 0.3086914E 01-0.9960938E 00 0.7836914E-01 0.2673828E 01
          0.1647461E 01 0.9414063E 00-0.3710449E 01-0.2964355E 01-0.1181885E 01
          0.3353760E 01-0.1392822E 01-0.9050293E 00 0.5061523E 01-0.3351563E 01
          0.1437988E 00 0.2206787E 01 0.2279053E 01 0.3275879E 01-0.1739258E 01
         -0.2940430E 01-0.5374756E 01
ROW  17   0.9667969E-01 0.2763672E 00 0.3862305E 00 0.4982910E 00 0.1024658E 01
         -0.1071777E 01 0.3457031E 00-0.2734375E-01-0.9284668E 00-0.5722656E 00
         -0.3271484E 00 0.1287842E 01 0.1029053E 01 0.4101563E 00-0.1164795E 01
          0.4836426E 00 0.3142090E 00-0.1757813E 01 0.1163574E 01-0.5004883E-01
         -0.7663574E 00-0.7915039E 00-0.1137451E 01 0.6037598E 00 0.1020752E 01
          0.1865967E 01
ROW  18   0.7875977E 00 0.1100342E 01 0.1419922E 01 0.2919434E 01-0.3053711E 01
          0.9851074E 00-0.7788086E-01-0.2645264E 01-0.1630127E 01-0.9318848E 00
          0.3669922E 01 0.2932373E 01 0.1168701E 01-0.3317871E 01 0.1377686E 01
          0.8952637E 00-0.5007568E 01 0.3315430E 01-0.1428223E 00-0.2183350E 01
         -0.2254639E 01-0.3240967E 01 0.1720215E 01 0.2908691E 01 0.5316895E 01
ROW  19   0.1537354E 01 0.1983887E 01 0.4078613E 01-0.4265869E 01 0.1376221E 01
         -0.1086426E 00-0.3695313E 01-0.2277100E 01-0.1301514E 01 0.5127197E 01
          0.4096680E 01 0.1632813E 01-0.4635010E 01 0.1924316E 01 0.1250732E 01
         -0.6995361E 01 0.4631592E 01-0.1992188E 00-0.3050049E 01-0.3149658E 01
         -0.4527832E 01 0.2403564E 01 0.4063477E 01 0.7427734E 01
ROW  20   0.2559814E 01 0.5262939E 01-0.5504883E 01 0.1776123E 01-0.1401367E 00
         -0.4768555E 01-0.2938477E 01-0.1679443E 01 0.6616211E 01 0.5286377E 01
          0.2107178E 01-0.5981201E 01 0.2483398E 01 0.1614014E 01-0.9027100E 01
          0.5976563E 01-0.2568359E 00-0.3935791E 01-0.4064453E 01-0.5842773E 01
          0.3101318E 01 0.5243652E 01 0.9584961E 01
ROW  21   0.1082202E 02-0.1131860E 02 0.3652100E 01-0.2880859E 00-0.9804688E 01
         -0.6041504E 01-0.3453369E 01 0.1360376E 02 0.1086963E 02 0.4332764E 01
         -0.1229785E 02 0.5106689E 01 0.3318604E 01-0.1856030E 02 0.1228906E 02
         -0.5283203E 00-0.8092285E 01-0.8356689E 01-0.1201318E 02 0.6376953E 01
          0.1078174E 02 0.1970801E 02
ROW  22   0.1183765E 02-0.3819824E 01 0.3010254E 00 0.1025464E 02 0.6318359E 01
          0.3611328E 01-0.1422852E 02-0.1136841E 02-0.4531738E 01 0.1286182E 02
         -0.5341064E 01-0.3471191E 01 0.1941162E 02-0.1285327E 02 0.5524902E 00
          0.8463135E 01 0.8739746E 01 0.1256396E 02-0.6669678E 01-0.1127686E 02
         -0.2061206E 02
ROW  23   0.1232178E 01-0.9741211E-01-0.3309082E 01-0.2039063E 01-0.1165527E 01
          0.4590820E 01 0.3668213E 01 0.1462158E 01-0.4150391E 01 0.1723145E 01
          0.1119873E 01-0.6263672E 01 0.4147217E 01-0.1784668E 00-0.2730713E 01
         -0.2820313E 01-0.4053955E 01 0.2151855E 01 0.3638428E 01 0.6650879E 01
ROW  24   0.7568359E-02 0.2607422E 00 0.1604004E 00 0.9179688E-01-0.3623047E 00
         -0.2893066E 00-0.1154785E 00 0.3271484E 00-0.1359863E 00-0.8837891E-01
          0.4936523E 00-0.3271484E 00 0.1391602E-01 0.2150879E 00 0.2221680E 00
          0.3193359E 00-0.1696777E 00-0.2871094E 00-0.5244141E 00
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ROW  25   0.8883057E 01 0.5473389E 01 0.3128418E 01-0.1232568E 02-0.9848145E 01
         -0.3925781E 01 0.1114185E 02-0.4626709E 01-0.3006836E 01 0.1681567E 02
         -0.1113428E 02 0.4785156E 00 0.7331055E 01 0.7571045E 01 0.1088330E 02
         -0.5777588E 01-0.9768555E 01-0.1785571E 02
ROW  26   0.3372559E 01 0.1927490E 01-0.7594727E 01-0.6068359E 01-0.2418945E 01
          0.6865234E 01-0.2850830E 01-0.1852783E 01 0.1036133E 02-0.6860840E 01
          0.2949219E 00 0.4517090E 01 0.4664795E 01 0.6706055E 01-0.3560059E 01
         -0.6019043E 01-0.1100220E 02
ROW  27   0.1101563E 01-0.4341064E 01-0.3468506E 01-0.1382568E 01 0.3923828E 01
         -0.1629639E 01-0.1059082E 01 0.5922119E 01-0.5921387E 01 0.1684570E 00
          0.2581787E 01 0.2666260E 01 0.3833008E 01-0.2034912E 01-0.3440430E 01
         -0.6288574E 01
ROW  28   0.1710107E 02 0.1366382E 02 0.5446289E 01-0.1545947E 02 0.6419189E 01
          0.4171631E 01-0.2333203E 02 0.1544824E 02-0.6643066E 00-0.1017236E 02
         -0.1150513E 02-0.1510132E 02 0.8016113E 01 0.1355347E 02 0.2477417E 02
ROW  29   0.1091748E 02 0.4351807E 01-0.1235205E 02 0.5129150E 01 0.3333252E 01
         -0.1864233E 02 0.1234326E 02-0.5307617E 00-0.8127685E 01-0.8393555E 01
         -0.1206592E 02 0.6405029E 01 0.1082935E 02 0.1979468E 02
ROW  30   0.1734863E 01-0.4923828E 01 0.2044434E 01 0.1328369E 01-0.7431152E 01
          0.4920410E 01-0.2116699E 00-0.3239746E 01-0.3345947E 01-0.4809814E 01
          0.2552979E 01 0.4316650E 01 0.7890625E 01
ROW  31   0.1397437E 02-0.5803223E 01-0.3771484E 01 0.2109131E 02-0.1396509E 02
          0.6000977E 00 0.9195313E 01 0.9496094E 01 0.1365112E 02-0.7246826E 01
         -0.1225220E 02-0.2239575E 02
ROW  32   0.2409424E 01 0.1565918E 01-0.8758301E 01 0.5799072E 01-0.2495117E 00
         -0.3818604E 01-0.3943359E 01-0.5668945E 01 0.3009033E 01 0.5087402E 01
          0.9299561E 01
ROW  33   0.1017578E 01-0.5691895E 01 0.3768555E 01-0.1621094E 00-0.2481689E 01
         -0.2562744E 01-0.3684326E 01 0.1955322E 01 0.3306152E 01 0.6043457E 01
ROW  34   0.3183203E 02-0.2107690E 02 0.9057617E 00 0.1387793E 02 0.1433179E 02
          0.2060278E 02-0.1093701E 02-0.1849170E 02-0.3380054E 02
ROW  35   0.1395532E 02-0.6000977E 00-0.9189209E 01-0.9489990E 01-0.1364185E 02
          0.7241455E 01 0.1224365E 02 0.2237988E 02
ROW  36   0.2563477E-01 0.3947754E 00 0.4077148E 00 0.5861816E 00-0.3115234E 00
         -0.5263672E 00-0.9621582E 00
ROW  37   0.6050537E 01 0.6248291E 01 0.8982178E 01-0.4768311E 01-0.8062012E 01
         -0.1473633E 02
ROW  38   0.6452637E 01 0.9276123E 01-0.4924316E 01-0.8325684E 01-0.1521826E 02

ROW  39   0.1333472E 02-0.7078857E 01-0.1196851E 02-0.2187671E 02
ROW  40   0.3757568E 01 0.6353271E 01 0.1161279E 02
ROW  41   0.1074170E 02 0.1963452E 02
ROW  42   0.3588989E 02
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W MATRIX
ROW   1   0.2210808E 03 0.1330063E 03 0.9390929E 02 0.1203347E 03 0.3506860E 02
          0.3976587E 02 0.3820044E 02 0.3131079E 02 0.2434399E 02 0.5401855E 01
          0.4838379E 01 0.6281567E 02 0.1616357E 02 0.4907886E 02 0.5182690E 02
          0.6436255E 02 0.5015552E 02 0.4999268E 02 0.4504663E 02 0.5761670E 02
          0.3373462E 02 0.2010742E 01 0.4721118E 02 0.4281616E 02 0.4110400E 02
          0.4907349E 02 0.4116650E 02 0.3526392E 02 0.3620239E 02 0.3820898E 02
          0.8694727E 02 0.8876636E 02 0.9093530E 02 0.9469141E 02 0.5554810E 02
          0.4610010E 02 0.4857446E 02 0.5253052E 02 0.4756665E 02 0.4357886E 02
          0.4158374E 02 0.5229297E 02
ROW   2   0.1838482E 03 0.1276526E 03 0.1205239E 03 0.3191777E 02 0.5334106E 02
          0.5437695E 02 0.2132837E 02 0.2259033E 02 0.7519165E 01 0.5752365E 01
          0.5112622E 02 0.2366113E 02 0.4555371E 02 0.4419434E 02 0.2356592E 02
          0.5136060E 02 0.4454321E 02 0.4407666E 02 0.2512329E 02 0.2233569E 02
         -0.2006958E 02 0.3150293E 02 0.3651880E 02 0.3541699E 02 0.4303955E 02
          0.2768286E 02 0.3101611E 02 0.4067261E 02 0.2720728E 02 0.5944775E 02
          0.4912598E 02 0.5714429E 02 0.6247754E 02 0.4671509E 02 0.7374512E 01
          0.2308960E 02 0.4166162E 02 0.1623999E 02 0.1877905E 02 0.2260669E 02
          0.2752954E 02
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ROW   3   0.1285817E 03 0.8487541E 02 0.3547185E 02 0.4235498E 02 0.4575977E 02
          0.1533203E 02 0.2145355E 02 0.9116364E 01 0.9683044E 01 0.4566992E 02
          0.2421387E 02 0.3358057E 02 0.3334375E 02 0.1397607E 02 0.2923242E 02
          0.3338475E 02 0.3472382E 02 0.1937476E 02 0.2749561E 02-0.1329150E 02
          0.1553442E 02 0.2680273E 02 0.2918774E 02 0.3795996E 02 0.2107324E 02
          0.1610962E 02 0.2545485E 02 0.1983936E 02 0.3799268E 02 0.4361992E 02
          0.4882016E 02 0.4269751E 02 0.3923730E 02-0.4357910E 00 0.1327417E 02
          0.2394556E 02 0.8526367E 01 0.2019727E 02 0.1408569E 02 0.2220752E 02
ROW   4   0.2709470E 03 0.4841089E 02 0.5026147E 02 0.4849438E 02 0.3829028E 02
          0.3438965E 02 0.1931641E 01 0.1938721E 01 0.8378662E 02 0.2908325E 02
          0.3435840E 02 0.3256494E 02 0.4479175E 02 0.5358325E 02 0.3901709E 02
          0.4001123E 02 0.3439913E 02 0.3369995E 02 0.1210474E 02 0.6103711E 02
          0.5566284E 02 0.4723901E 02 0.6194678E 02 0.3156421E 02 0.3988647E 02
          0.3498730E 02 0.4054443E 02 0.9319653E 02 0.7001367E 02 0.8802515E 02
          0.8960791E 02 0.6935303E 02 0.3061304E 02 0.3997388E 02 0.6037720E 02
          0.5711475E 02 0.4767871E 02 0.5205737E 02 0.5857685E 02
ROW   5   0.2398372E 03 0.1481167E 03 0.1203284E 03 0.1034382E 03 0.1068345E 03
          0.6293796E 02 0.6249620E 02 0.4210693E 02 0.1050591E 03 0.7584448E 02
          0.7517920E 02 0.5565283E 02 0.5191724E 02 0.3482959E 02 0.3223999E 02
          0.6066455E 02 0.8824683E 02 0.2655420E 02 0.1025801E 03 0.9450293E 02
          0.7524951E 02 0.7914282E 02 0.8586694E 02 0.8983130E 02 0.7552417E 02
          0.9238452E 02-0.2192017E 02-0.1091553E 01 0.1640381E 01 0.9512939E 01
         -0.1417480E 01 0.9282715E 01-0.1608398E 01-0.1192578E 02 0.7825195E 01
          0.4363208E 02 0.2639063E 02 0.3480762E 02
ROW   6   0.3492505E 03 0.2811353E 03 0.2343806E 03 0.2124980E 03 0.1276223E 03
          0.1329058E 03 0.4889331E 02 0.1485593E 03 0.1262217E 03 0.1210452E 03
          0.8656787E 02 0.1186741E 03 0.8571143E 02 0.9203857E 02 0.1251428E 03
          0.1571938E 03 0.6333057E 02 0.2089492E 03 0.1898606E 03 0.1497124E 03
          0.1631858E 03 0.1759714E 03 0.1547793E 03 0.1412756E 03 0.1368091E 03
         -0.2590942E 02-0.2881543E 02-0.2662427E 02 0.7051270E 01-0.1368237E 02
         -0.1319727E 02-0.3798584E 02-0.3199658E 02-0.8241699E 01 0.8903638E 02
          0.6988013E 02 0.7921216E 02
ROW   7   0.3335537E 03 0.2070476E 03 0.1676484E 03 0.1306418E 03 0.1271272E 03
          0.4715552E 02 0.1347026E 03 0.1009578E 03 0.9931689E 02 0.7931055E 02
          0.1130833E 03 0.7573511E 02 0.8159448E 02 0.1210181E 03 0.1497178E 03
          0.6221851E 02 0.1678318E 03 0.1742744E 03 0.1444097E 03 0.1575837E 03
          0.1564207E 03 0.1359807E 03 0.1291504E 03 0.1292349E 03-0.8562256E 01
         -0.1362695E 02-0.2719653E 02 0.5901123E 01-0.4958740E 01-0.1601880E 02
         -0.2714771E 02-0.2443994E 02 0.1468262E 01 0.7157544E 02 0.6124146E 02
          0.7274219E 02
ROW   8   0.2945862E 03 0.2491948E 03 0.1505688E 03 0.1598486E 03 0.3100977E 02
          0.1163320E 03 0.8320825E 02 0.8591895E 02 0.6231787E 02 0.9390137E 02
          0.7788403E 02 0.7703271E 02 0.9021997E 02 0.1292666E 03 0.6118262E 02
          0.1648381E 03 0.1622263E 03 0.1375820E 03 0.1262148E 03 0.1423003E 03
          0.1360232E 03 0.1304646E 03 0.1484214E 03 0.6892578E 01 0.9813721E 01
          0.9452881E 01 0.2081055E 02 0.6761475E 01 0.6650146E 01-0.8806152E 00
          0.3797607E 01 0.1578662E 02 0.7075732E 02 0.3912183E 02 0.5111206E 02
ROW   9   0.2950217E 03 0.1677795E 03 0.1659451E 03 0.3106812E 02 0.1084116E 03
          0.6178467E 02 0.6155078E 02 0.3932422E 02 0.6126221E 02 0.4888916E 02
          0.5461646E 02 0.6157300E 02 0.1150657E 03 0.4769727E 02 0.1275103E 03
          0.1223977E 03 0.1238799E 03 0.1081448E 03 0.1132888E 03 0.1262107E 03
          0.1252461E 03 0.1439128E 03-0.6903320E 01 0.9157227E 01 0.1524634E 02
          0.2149146E 02 0.1282715E 02-0.5024414E 01-0.1385719E 00-0.4031006E 01
          0.2842065E 02 0.6163892E 02 0.3720190E 02 0.4188062E 02
ROW  10   0.1817001E 03 0.1435233E 03 0.1486426E 02 0.7642847E 02 0.4548975E 02
          0.4180249E 02 0.3172290E 02 0.4399756E 02 0.4281689E 02 0.4513086E 02
          0.4121338E 02 0.6961084E 02 0.3562158E 02 0.7697607E 02 0.8129028E 02
          0.9391284E 02 0.7600098E 02 0.8304468E 02 0.7376440E 02 0.8580176E 02
          0.9281616E 02-0.1374902E 02 0.2474121E 01 0.3639160E 01 0.7809326E 01
          0.3493164E 01-0.2622876E 02 0.1224365E 01 0.4718994E 01 0.1461499E 02
          0.2990063E 02 0.1289404E 02 0.1090332E 02
```

```
ROW  11   0.1781282E 03 0.1738843E 02 0.7858057E 02 0.4585327E 02 0.4786011E 02
          0.3731641E 02 0.4584326E 02 0.5062085E 02 0.5743164E 02 0.4669312E 02
          0.7187524E 02 0.4123560E 02 0.7428125E 02 0.8422607E 02 0.9325342E 02
          0.8025610E 02 0.7691602E 02 0.7922144E 02 0.9047021E 02 0.9493823E 02
         -0.1621680E 02 0.3581055E 01 0.1163330E 00 0.1069800E 02 0.1040039E 02
         -0.1495288E 02 0.7468262E 01 0.1194043E 02 0.2025098E 02 0.3611353E 02
          0.2299487E 02 0.2698999E 02
ROW  12   0.2374370E 03 0.1079612E 03 0.7021362E 02 0.7425244E 02 0.6015552E 02
          0.6523315E 02 0.4879614E 02 0.5006812E 02 0.8037866E 02 0.8870874E 02
          0.3069922E 02 0.7358276E 02 0.6289331E 02 0.5267969E 02 0.5693213E 02
          0.7538843E 02 0.6296118E 02 0.6628174E 02 0.7645654E 02 0.7636914E 02
          0.7580591E 02 0.5557300E 02 0.8579614E 02 0.5495166E 02 0.5235938E 02
          0.1863110E 02 0.3689331E 02 0.5497095E 02 0.5974780E 02 0.6798071E 02
          0.6829150E 02
ROW  13   0.3238623E 03 0.1285195E 03 0.1234065E 03 0.5837842E 02 0.9655786E 02
          0.7200586E 02 0.7300610E 02 0.1004998E 03 0.1872322E 03 0.7829810E 02
          0.1468918E 03 0.1307446E 03 0.1133489E 03 0.1148979E 03 0.1396384E 03
          0.1372329E 03 0.1346567E 03 0.1509377E 03-0.1654248E 02-0.2887476E 02
         -0.2208081E 02 0.1389380E 02 0.1471191E 02 0.6913330E 01-0.1407080E 02
         -0.6541260E 01-0.1884839E 02 0.9478296E 02 0.6078442E 02 0.7671436E 02
ROW  14   0.2857810E 03 0.2512039E 03 0.1544983E 03 0.1796682E 03 0.1580105E 03
          0.1654602E 03 0.1547031E 03 0.1298796E 03 0.5353271E 02 0.1905542E 03
          0.1383416E 03 0.9697388E 02 0.9874878E 02 0.1613281E 03 0.1327588E 03
          0.7911743E 02 0.1013943E 03 0.1786963E 02 0.2447705E 02 0.6890381E 01
          0.1729224E 02-0.1080054E 02 0.1592041E 02 0.1296875E 01 0.1219849E 02
         -0.4820801E 01 0.8014795E 02 0.6445679E 02 0.6487744E 02
ROW  15   0.2678940E 03 0.1697495E 03 0.1865894E 03 0.1634104E 03 0.1680913E 03
          0.1618447E 03 0.1439067E 03 0.5121973E 02 0.1696663E 03 0.1295122E 03
          0.9195361E 02 0.9356177E 02 0.1550686E 03 0.1253411E 03 0.8416748E 02
          0.1128159E 03 0.1096851E 02 0.3056470E 02 0.1284009E 02 0.1460742E 02
          0.4341064E 01 0.2428540E 02 0.7421875E 01 0.1508374E 02 0.6572510E 01
          0.7618750E 02 0.7437524E 02 0.8249927E 02
ROW  16   0.2837700E 03 0.1829432E 03 0.1429512E 03 0.1376484E 03 0.1763694E 03
          0.1096367E 03 0.5202930E 02 0.1461289E 03 0.1277339E 03 0.8567993E 02
          0.8728638E 02 0.1355559E 03 0.8771045E 02 0.6355566E 02 0.8488354E 02
          0.5124854E 02 0.9472437E 02 0.4769531E 02 0.5395508E 02 0.9743896E 01
          0.4538672E 02 0.2801440E 02 0.1701953E 02 0.3038721E 02 0.6489966E 02
          0.8134937E 02 0.9360693E 02
ROW  17   0.2627100E 03 0.1854807E 03 0.1753433E 03 0.1684631E 03 0.1280417E 03
          0.4388965E 02 0.1757517E 03 0.1637512E 03 0.1218015E 03 0.1265337E 03
          0.1511174E 03 0.1157122E 03 0.9189917E 02 0.1169160E 03 0.2393286E 02
          0.2870996E 02 0.6730225E 01 0.2401758E 02-0.1435132E 02-0.5640381E 01
         -0.1443799E 02 0.3465576E 01-0.1947559E 02 0.6357324E 02 0.6405127E 02
          0.6976953E 02
ROW  18   0.2427927E 03 0.2141594E 03 0.1413315E 03 0.9664966E 02 0.2473901E 02
          0.1375122E 03 0.1278735E 03 0.9197144E 02 0.9938159E 02 0.1092966E 03
          0.1043301E 03 0.9003467E 02 0.1052126E 03 0.2582617E 02 0.2386548E 02
          0.1081763E 02 0.2181982E 02 0.4905762E 01 0.2131836E 01 0.1012207E 01
          0.2487354E 02-0.1272705E 01 0.4213062E 02 0.4312451E 02 0.5405347E 02
ROW  19   0.2331838E 03 0.1337622E 03 0.1047144E 03 0.3221069E 02 0.1311321E 03
          0.1207219E 03 0.9271753E 02 0.9952319E 02 0.1132078E 03 0.1103728E 03
          0.9300293E 02 0.9972363E 02 0.1561035E 02 0.2534644E 02 0.1911133E 02
          0.2405908E 02 0.1820557E 02 0.7732422E 01 0.1356396E 02 0.3529346E 02
          0.1606934E 02 0.5004419E 02 0.5233716E 02 0.6196191E 02
ROW  20   0.2928325E 03 0.1463503E 03 0.6906860E 02 0.1764395E 03 0.1420850E 03
          0.9934326E 02 0.1033308E 03 0.1672375E 03 0.1483838E 03 0.1052993E 03
          0.1251582E 03 0.2533496E 02 0.4855542E 02 0.1879492E 02 0.3567920E 02
          0.3178589E 02 0.2111890E 02 0.3294922E 01 0.9799316E 01 0.4920166E 01
          0.1055342E 03 0.1041709E 03 0.1385422E 03
ROW  21   0.3483411E 03 0.1254956E 03 0.1741216E 03 0.1675259E 03 0.1455342E 03
          0.1531548E 03 0.1753540E 03 0.1668962E 03 0.1514124E 03 0.1634270E 03
         -0.3522461E 01 0.1482715E 02 0.4623535E 01 0.3565723E 02 0.3433252E 02
          0.2612231E 02 0.8048096E 01 0.3209717E 02 0.2186062E 02 0.1363911E 03
          0.9843652E 02 0.1211458E 03
```

```
ROW  22    0.2496763E 03 0.1026929E 03 0.8629590E 02 0.7673999E 02 0.7324536E 02
           0.1031624E 03 0.7422852E 02 0.5084375E 02 0.6806787E 02 0.5451953E 02
           0.1352344E 02 0.1425586E 02 0.3594751E 02 0.4301904E 02 0.5593945E 02
           0.6565845E 02 0.6372437E 02 0.4680078E 02 0.8780786E 02 0.8080176E 02
           0.9463989E 02
ROW  23    0.3923369E 03 0.3112080E 03 0.2161599E 03 0.2242546E 03 0.2890496E 03
           0.2084092E 03 0.1461606E 03 0.1870076E 03 0.1644336E 02 0.7199707E 01
          -0.5937500E 01 0.3495995E 02-0.3267188E 02 0.8454834E 01-0.7987305E 01
          -0.2164917E 02-0.1710059E 02 0.1195776E 03 0.8353296E 02 0.8009521E 02
ROW  24    0.3621694E 03 0.2337007E 03 0.2627844E 03 0.2513223E 03 0.1743623E 03
           0.1506155E 03 0.1728669E 03 0.2034155E 02 0.1941235E 02 0.1580322E 01
           0.4902026E 02-0.2851245E 02-0.1571777E 01 0.6357422E 00-0.2797339E 02
          -0.1076685E 02 0.9613672E 02 0.6496118E 02 0.7171802E 02
ROW  25    0.2947192E 03 0.2691013E 03 0.2135623E 03 0.1153257E 03 0.1310581E 03
           0.1395115E 03 0.2130591E 02 0.2475391E 02 0.2049316E 02 0.5604077E 02
           0.9068115E 01-0.1307520E 02 0.1442041E 02 0.5843506E 01 0.1137085E 02
           0.6272241E 02 0.4655884E 02 0.5084473E 02
ROW  26    0.3165198E 03 0.2216306E 03 0.1340947E 03 0.1446541E 03 0.1451843E 03
           0.1698853E 02 0.1888965E 02 0.1676172E 02 0.4779077E 02-0.7876709E 01
          -0.2093286E 02 0.5842041E 01-0.9299316E 00 0.4371338E 01 0.7019556E 02
           0.4693359E 02 0.5462939E 02
ROW  27    0.3362134E 03 0.1813411E 03 0.1430764E 03 0.1673938E 03 0.4424316E 01
           0.1283960E 02-0.5007080E 01 0.2418848E 02 0.8203369E 01 0.2936768E 02
           0.2322485E 02 0.1232275E 02 0.1658691E 02 0.1097698E 03 0.8783276E 02
           0.9883569E 02
ROW  28    0.2953989E 03 0.2173362E 03 0.2010537E 03-0.7040527E 01-0.5419189E 01
          -0.9671631E 01 0.1983203E 02 0.2905176E 02 0.1216431E 02 0.5172363E 01
           0.1250513E 02 0.1013184E 00 0.1009839E 03 0.7794653E 02 0.9572583E 02
ROW  29    0.2670273E 03 0.1952837E 03 0.1865967E 01 0.1494287E 02 0.1485474E 02
           0.3499609E 02 0.5035840E 02 0.7845703E 01 0.1250903E 02 0.2175830E 02
           0.7209717E 01 0.7434644E 02 0.6322607E 02 0.7815576E 02
ROW  30    0.2819587E 03 0.2401514E 02 0.3162964E 02 0.2001147E 02 0.4686499E 02
           0.3901074E 02 0.3359033E 02 0.2735596E 02 0.1315259E 02 0.2615796E 02
           0.8280615E 02 0.5454810E 02 0.6868140E 02
ROW  31    0.3506472E 03 0.2230354E 03 0.1937246E 03 0.1923203E 03 0.8803979E 02
           0.1150713E 03 0.1129595E 03 0.1159128E 03 0.9581299E 02 0.2305908E 02
           0.2923853E 02 0.2865820E 02
ROW  32    0.3363972E 03 0.2323899E 03 0.1894988E 03 0.8838892E 02 0.9694019E 02
           0.1080232E 03 0.9226953E 02 0.1022822E 03 0.2881421E 02 0.4684082E 02
           0.6406519E 02
ROW  33    0.2684438E 03 0.1835898E 03 0.1151460E 03 0.9139160E 02 0.1027856E 03
           0.9972314E 02 0.1005959E 03 0.3289014E 02 0.3500610E 02 0.4502563E 02
ROW  34    0.2800051E 03 0.8788647E 02 0.7337891E 02 0.8428247E 02 0.6673462E 02
           0.7787793E 02 0.5252832E 02 0.5663818E 02 0.5801830E 02
ROW  35    0.3345337E 03 0.1750007E 03 0.1676479E 03 0.1520591E 03 0.1390176E 03
           0.7341602E 02 0.9755493E 02 0.1184517E 03
ROW  36    0.3575793E 03 0.2387324E 03 0.1517139E 03 0.1827952E 03 0.8122876E 02
           0.8471167E 02 0.8144580E 02
ROW  37    0.3634192E 03 0.2546357E 03 0.2034268E 03 0.5498389E 02 0.6668091E 02
           0.7797949E 02
ROW  38    0.3587410E 03 0.1763760E 03 0.5356543E 02 0.6896118E 02 0.8114648E 02

ROW  39    0.3198918E 03 0.7072534E 02 0.7582495E 02 0.8560620E 02
ROW  40    0.2476238E 03 0.1458955E 03 0.1536636E 03
ROW  41    0.2097031E 03 0.1819153E 03
ROW  42    0.2606655E 03
--------------------------------------------------------------------------------
```

DISPERSION DETERMINANT = 0.1025E-19

FOR TEST OF H1 (EQUALITY OF DISPERSIONS), M = 2289.289 AND F = 2.125

FOR F, NDF1 = 903 AND NDF2 = 124509
*** I M S L(UERTST) *** TERMINAL MDFD 1 (IER = 129)

FOR F-TEST, LEFT HAND AREA UNDER CURVE FOR GIVEN NDF-S = ******

UNIVARIATE F-RATIOS, WITH NDF1 = 1 AND NDF2 = 360

VARIABLE	AMONG MEAN SQ	WITHIN MEAN SQ	F-RATIO	F-SIGNIFICANCE LEVEL	ETA SQUARE
1	1.063	0.614	1.731	0.1892	0.0048
2	1.779	0.511	3.484	0.0628	0.0096
3	0.987	0.357	2.764	0.0973	0.0076
4	0.567	0.753	0.753	0.3861	0.0021
5	0.196	0.666	0.294	0.5879	0.0008
6	6.794	0.970	7.003	0.0085	0.0191
7	25.739	0.927	27.780	0.0000	0.0716
8	2.121	0.818	2.592	0.1083	0.0071
9	0.097	0.820	0.119	0.7310	0.0003
10	0.623	0.505	1.235	0.2673	0.0034
11	0.096	0.495	0.193	0.6604	0.0005
12	4.696	0.660	7.120	0.0080	0.0194
13	0.815	0.900	0.906	0.3420	0.0025
14	1.324	0.794	1.668	0.1974	0.0046
15	0.007	0.744	0.009	0.9253	0.0000
16	0.805	0.788	1.021	0.3130	0.0028
17	0.097	0.730	0.132	0.7162	0.0004
18	0.788	0.674	1.168	0.2806	0.0032
19	1.537	0.648	2.373	0.1243	0.0065
20	2.560	0.813	3.147	0.0769	0.0087
21	10.822	0.968	11.184	0.0009	0.0301
22	11.838	0.694	17.068	0.0000	0.0453
23	1.232	1.090	1.131	0.2884	0.0031
24	0.008	1.006	0.008	0.9318	0.0000
25	8.883	0.819	10.851	0.0011	0.0293
26	3.373	0.879	3.836	0.0510	0.0105
27	1.102	0.934	1.179	0.2782	0.0033
28	17.101	0.821	20.841	0.0000	0.0547
29	10.917	0.742	14.719	0.0002	0.0393
30	1.735	0.783	2.215	0.1376	0.0061
31	13.974	0.974	14.347	0.0002	0.0383
32	2.409	0.934	2.578	0.1092	0.0071
33	1.018	0.746	1.365	0.2435	0.0038
34	31.832	0.778	40.926	0.0000	0.1021
35	13.955	0.929	15.018	0.0001	0.0400
36	0.026	0.993	0.026	0.8729	0.0001
37	6.051	1.009	5.994	0.0148	0.0164
38	6.453	0.997	6.475	0.0114	0.0177
39	13.335	0.889	15.007	0.0001	0.0400
40	3.758	0.688	5.463	0.0200	0.0149
41	10.742	0.583	18.440	0.0000	0.0487
42	35.890	0.724	49.567	0.0000	0.1210

```
--------------------------------------------------------------------------------
WILKS LAMBDA =  0.4275   GENERALIZED CORRELATION RATIO, ETA SQUARE =  0.5725
F-RATIO FOR H2, OVERALL DISCRIMINATION, =     10.171
FOR F, NDF1 =  42 AND NDF2 =       319
FOR F-TEST, LEFT HAND AREA UNDER CURVE FOR GIVEN NDF-S = 1.0000
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------


END
```

APPENDIX F

SAMPLE S

COMPUTERIZED METHOD OF SUCCESSIVE INTERVALS

Monroe Model 325 computer program to perform ordinal-to-interval data conversion using Torgerson's method of successive intervals applied to the Law of Comparative Judgment.

Program Block One accepts the input data and calculates certain probabilistic values. After rewinding the data tape written by block one, program block two calculates the standard normal deviates for each of the relative frequencies. An approximation to the inverse normal distribution given by Abramowitz and Stegun* is used for these calculations. After rewinding the data tape from the second program block, block three produces the interval scale values for each of 42 educational areas.

Register assignments for each program block follows:

Register #	Block 1	Block 2	Block 3
0	cumulative relative frequency, cell 4	N(0,1), cell 4	t_4
1	cumulative relative frequency, cell 3	N(0,1), cell 3	t_3
2	cumulative relative frequency, cell 2	N(0,1), cell 2	t_2
3	cumulative relative frequency, cell 1	row total	row mean
4	row sum	column 4 sum	column 4 sum
5	unused	column 3 sum	column 3 sum
6	unused	column 2 sum	column 2 sum
7	unused	unused	A
8	unused	unused	mean t
9	counter	counter	counter
d	counter	switch	B_1
s	scratch	t work	unused

* Refer to formula #26.2.23 for the rational approximation where the error is less than 4.5×10^{-4}.

Block One:

```
•001  001        1
•002  004        4
•003  041    TR
•004  137   CA
•005  220 DP     0
•006  004        4
•007  002        2
•008  300   ST
•009  012       d
•010  200     L 0
•011  004        4
•012  360  B
•013  011        9
•014  300   ST
•015  000        0
•016  300   ST
•017  004        4
•018  003        3
•019  360  B
•020  011        9
•021  300   ST
•022  001        1
•023  301   ST+
•024  004        4
•025  002        2
•026  360  B
•027  011        9
•028  300   ST
•029  002        2
•030  301   ST+
•031  004        4
•032  001        1
•033  360  B
•034  011        9
•035  300   ST
•036  003        3
•037  321   XC+
•038  004        4
•039  034  PT
•040  114  PS
•041  310   RC
•042  000        0
•043  314   RC÷
•044  004        4
•045  300   ST
•046  000        0
•047  310   RC
•048  001        1
•049  314   RC÷
•050  004        4
•051  311   RC+
•052  000        0
•053  300   ST
•054  001        1
•055  310   RC
•056  002        2
•057  314   RC÷
•058  004        4
•059  311   RC+
•060  001        1
•061  300   ST
•062  002        2
•063  037   CL
•064  340     D  W
•065  003        3
•066  037   CL
•067  340     D  W
•068  003        3
•069  001        1
•070  322   XC-
•071  012       d
•072  351  JC
•073  000        0
•074  202     L 2
•075  224 DP     4
•076  002        2
•077  032  I D
•078  033   S  S
•079  002        2
•080  041    TR
•081  211     L 9
•082  300   ST
•083  013       S
•084  004        4
•085  002        2
•086  312   RC-
•087  012       d
•088  021      +
•089  001        1
•090  021      +
•091  026    (
•092  310   RC
•093  013       S
•094  024      ÷
•095  001        1
•096  000        0
•097  027       )
•098  020      =
•099  032  I D
•100  033   S  S
•101  357  JC
•102  010        8
•103  310   RC
•104  013       S
•105  350  J
•106  011        9
•107  210     L 8
•108  030   RT
```

Block Two:

```
•001  037  CL            •051  037  CL
•002  300  ST            •052  340   D   W
•003  004        4       •053  003       3
•004  300  ST            •054  001       1
•005  005        5       •055  322  XC-
•006  300  ST            •056  011       9
•007  006        6       •057  353  JC
•008  001        1       •058  000       0
•009  004        4       •059  112  D T
•010  041   TR           •060  003       3
•011  004        4       •061  032  I D
•012  002        2       •062  033  S   S
•013  300  ST            •063  003       3
•014  011        9       •064  041   TR
•015  200   L 0          •065  211   L 9
•016  037  CL            •066  300  ST
•017  041   TR           •067  013       S
•018  310  RC            •068  001       1
•019  000        0       •069  013       S
•020  360  B             •070  300  ST
•021  011        9       •071  012       d
•022  300  ST            •072  310  RC
•023  000        0       •073  013       S
•024  300  ST            •074  022     -
•025  003        3       •075  012       d
•026  301  ST+           •076  005       5
•027  004        4       •077  020     =
•028  310  RC            •078  352  JC
•029  001        1       •079  010       8
•030  360  B             •080  001       1
•031  011        9       •081  022     -
•032  300  ST            •082  310  RC
•033  001        1       •083  013       S
•034  301  ST+           •084  020     =
•035  003        3       •085  300  ST
•036  301  ST+           •086  013       S
•037  005        5       •087  001       1
•038  310  RC            •088  300  ST
•039  002        2       •089  012       d
•040  360  B             •090  210   L 8
•041  011        9       •091  310  RC
•042  300  ST            •092  013       S
•043  002        2       •093  162  SQ
•044  301  ST+           •094  063  1/x
•045  003        3       •095  060  ln
•046  301  ST+           •096  062  √
•047  006        6       •097  300  ST
•048  003        3       •098  013       S
•049  324  XC+           •099  022     -
•050  003        3       •100  026     (
```

```
•101  310  RC
•102  013      S
•103  023    x
•104  012      d
•105  000        0
•106  001        1
•107  000        0
•108  003        3
•109  002        2
•110  010        8
•111  021    +
•112  012      d
•113  010        8
•114  000        0
•115  002        2
•116  010        8
•117  005        5
•118  003        3
•119  023    x
•120  310  RC
•121  013      S
•122  021    +
•123  002        2
•124  012      d
•125  005        5
•126  001        1
•127  005        5
•128  005        5
•129  001        1
•130  007        7
•131  024    +
•132  026  (
•133  310  RC
•134  013      S
•135  023    x
•136  012      d
•137  000        0
•138  000        0
•139  001        1
•140  003        3
•141  000        0
•142  010        8
•143  021    +
•144  012      d
•145  001        1
•146  010        8
•147  011        9
•148  002        2
•149  006        6
•150  011        9
•151  023      x
•152  310  RC
•153  013        S
•154  021      +
•155  001          1
•156  012        d
•157  004          4
•158  003          3
•159  002          2
•160  007          7
•161  010          8
•162  010          8
•163  023      x
•164  310  RC
•165  013        S
•166  021      +
•167  001          1
•168  027        )
•169  027        )
•170  020      =
•171  110  R
•172  023      x
•173  310  RC
•174  012        d
•175  020      =
•176  030  RT
•177
•178
•179
•180
```

Block Three:

•001	001	1
•002	004	4
•003	041	TR
•004	310	RC
•005	004	4
•006	024	+
•007	004	4
•008	002	2
•009	020	=
•010	300	ST
•011	000	0
•012	300	ST
•013	010	8
•014	310	RC
•015	005	5
•016	024	+
•017	004	4
•018	002	2
•019	020	=
•020	300	ST
•021	001	1
•022	301	ST+
•023	010	8
•024	310	RC
•025	006	6
•026	024	+
•027	004	4
•028	002	2
•029	020	=
•030	300	ST
•031	002	2
•032	311	RC+
•033	010	8
•034	024	÷
•035	003	3
•036	020	=
•037	300	ST
•038	010	8
•039	310	RC
•040	000	0
•041	022	-
•042	310	RC
•043	010	8
•044	020	=
•045	162	SQ
•046	300	ST
•047	007	7
•048	310	RC
•049	001	1
•050	022	-

•051	310	RC
•052	010	8
•053	020	=
•054	162	SQ
•055	301	ST+
•056	007	7
•057	310	RC
•058	002	2
•059	022	-
•060	310	RC
•061	010	8
•062	020	=
•063	162	SQ
•064	301	ST+
•065	007	7
•066	224	OP 4
•067	201	L 1
•068	004	4
•069	002	2
•070	300	ST
•071	011	9
•072	035	P A
•073	035	P A
•074	112	O T
•075	035	P A
•076	035	P A
•077	202	L 2
•078	037	CL
•079	041	TR
•080	037	CL
•081	041	TR
•082	310	RC
•083	000	0
•084	022	-
•085	310	RC
•086	003	3
•087	020	=
•088	162	SQ
•089	300	ST
•090	012	d
•091	310	RC
•092	001	1
•093	022	-
•094	310	RC
•095	003	3
•096	020	=
•097	162	SQ
•098	301	ST+
•099	012	d
•100	310	RC

```
•101  002       2
•102  022       -
•103  310  RC
•104  003       3
•105  020       =
•106  162  SQ
•107  301  ST+
•108  012      d
•109  310  RC
•110  010       8
•111  022       -
•112  026    (
•113  310  RC
•114  007       7
•115  024      +
•116  310  RC
•117  012      d
•118  020      =
•119  062  √
•120  023      x
•121  310  RC
•122  003       3
•123  027      )
•124  020      =
•125  300  ST
•126  012      d
•127  004       4
•128  003       3
•129  022       -
•130  310  RC
•131  011       9
•132  020      =
•133  032  I D
•134  034  PT
•135  310  RC
•136  012      d
•137  110  R
•138  013      S
•139  034  PT
•140  001       1
•141  322  XC-
•142  011       9
•143  353  JC
•144  002       2
•145  035  P A
•146  035  P A
•147  112  D T
•148  035  P A
•149  035  P A
•150  035  P A
•151  035  P A
•152  011        9
•153  011        9
•154  011        9
•155  032  I D
•156  033   S  S
•157  001        1
•158  004        4
•159  041    TR
•160  350  J
•161  001        1
•162
•163
•164
•165
•166
```

Sample Output:

Raw Totals:

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259.
259.
258.
259.
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Scale Values:
1.
    -0.7927
2.
    -1.7207
3.
    -2.6394
4.
    -0.2574
5.
    -1.0660
6.
    -0.0618
7.
    -0.5220
8.
    -0.5071
9.
    -0.6148
10.
    -1.0544
11.
    -1.0306
12.
    -0.1615
13.
    -0.1298
14.
    -0.1758
15.
    -0.1991
16.
     0.1581
17.
    -0.0290
18.
    -0.2592
19.
    -0.3162
20.
     0.6078
21.
     0.4778
```

22.
0.7760
23.
0.8015
24.
0.3241
25.
-0.2353
26.
-0.1084
27.
0.2163
28.
0.5582
29.
0.1544
30.
0.2243
31.
-0.1125
32.
-0.2674
33.
-0.4226
34.
0.0183
35.
0.5639
36.
0.4536
37.
0.0221
38.
-0.0624
39.
-0.7462
40.
1.3325
41.
1.6354
42.
1.7882

....

APPENDIX G

EMPIRICAL DATA PRESENTATION

A. PRESENTATION OF ORGANIZATIONAL PARAMETER DATA

VAR001 "Command Name" - Of the 119 commands which received the original questionnaire, 99 commands [83.2%] had at least one respondent.

VAR002 "Billet Sequence Code" - No meaningful statistic exists.

VAR003 "Billet Title" - A listing of billet titles was used by the researchers only to gain an insight into a billet's function.

VAR004 "Unit Identification Code" - No meaningful statistic exists.

VAR005 "CONUS/Overseas Code" -

Code	# of cases	% of total
Continental U.S.	220	67.7%
Europe	24	7.4%
Pacific	66	20.3%
Atlantic/Med Afloat	11	3.4%
Pacific Afloat	4	1.2%
	325	

VAR006 "Country Code" - Geographically, responses were received from ten states, Washington, D.C., eight foreign countries, four U.S. protectorates, and forces afloat in the Atlantic, Pacific, and Mediterranean. The breakdown by the number of cases represented in each category is as follows:

Code	# of cases	% of total
United States	261	80.3%
Foreign countries	43	13.2%
Afloat	15	4.6%
Protectorates	6	1.9%
	325	

VAR016 "Billet Subspecialty Code" - Of the 319 military respondents, only 126 [39.5%] reported that their billet called for a specific subspecialty. The following breaks down those billet subspecialty codes reported:

Code	# of cases	% of 126 cases	% of 319 military
7210	91	72.2%	28.5%
7120	3	2.4%	0.9%
9670	3	2.4%	0.9%
2710	2	1.6%	0.6%
7110	2	1.6%	0.6%
8110	2	1.6%	0.6%
9640	2	1.6%	0.6%
Others	21	16.6%	6.6%
	126		

B. PRESENTATION OF PERSONAL PARAMETER DATA

VAR010 "Respondent's Name" - No meaningful presentation.

VAR003 "Billet Title" - Refer to organizational parameter data.

VAR011 "Respondent's Rank -

Code	# of respondents	% of total
Civilian	6	1.9%
Lieutenant	7	2.2%
Lieutenant Commander	175	53.8%
Commander	97	29.8%
Captain	40	12.3%
	325	

VAR012 "Respondent's Age" -

Code	Mean Age	Std. Deviation
Civilian	45.7	10.8
Lieutenant	29.9	2.8
Lieutenant Commander	36.2	3.2
Commander	40.9	2.6
Captain	46.6	3.5
Overall for respondents	39.0	5.2

(Note: only 317 respondents provided age information)

VAR013 "Respondent's Designator" -

Designator	# of respondents	% of military total
1630	186	58.3%
1110	41	12.6%
1310	28	8.8%
1120	20	6.3%
1637	7	2.2%
1635	6	1.9%
1610	6	1.9%
1320	5	1.6%
6632	3	0.9%
6622	2	0.6%
1100	2	0.6%
1350	1	0.3%
1510	1	0.3%
1636	1	0.3%
1810	1	0.3%
5100	1	0.3%
6462	1	0.3%
6631	1	0.3%
Unspecified designators	6	1.9%
	319 military	

VAR014 "Respondent's Previous Designator" - Of the 319 military respondents, 194 [60.8%] reported having had at least one designator prior to their present designator. The following percentages are based on the 194 total reporting previous designators.

[illegible]

Previous Designator	# of respondents	% of 194 total
1350	75	38.7%
1100	40	20.6%
1355	20	10.3%
1635	16	8.2%
1105	9	4.6%
1310	8	4.1%
1120	7	3.6%
1110	5	2.6%
1315	3	1.5%
1320	3	1.5%
1357	3	1.5%
1615	2	1.0%
1325	1	0.5%
1530	1	0.5%
6621	1	0.5%
	194	

VAR015 "Respondent's First Designator" - Of the 319 military respondents, 52 [16.3%] reported having had at least two designators prior to their present designator. The following percentages are based on the 52 total reporting at least two such designator changes.

First Designator	# of respondents	% of 52 total
1355	17	32.7%
1105	15	28.8%
1310	8	15.4%
1100	5	9.6%
1315	2	3.8%
1108	1	1.9%
1120	1	1.9%
1327	1	1.9%
1350	1	1.9%
1395	1	1.9%
	52	

VAR017 "Respondent's Subspecialty Code" - A total of 32 different respondent subspecialty codes were reported. The "other" category includes seven different codes with a frequency of two each, and 22 other codes with a frequency of two each, and 22 other codes reported only once.

Subspecialty Code	# of respondents	% of 319 military
7210	51	16.0%
7160	5	1.6%
9210	4	1.3%
Other (29 different codes)	36	11.3%
	96 reported	30.2%

VAR018 "Respondent's Education Level" -

Level reported	# of respondents	% of total
Less than a bachelors	21	6.5%
Bachelors degree	168	51.7%
Postgraduate studies	41	12.6%
Masters degree	83	25.5%
Ph.D.	3	0.9%
level not reported	9	2.8%
	325	

VAR019 "Training Used in Billet" - For a complete explanation of the training codes used refer to Table D-7 in Appendix D. Categories are not mutually exclusive and a respondent may be recorded more than once.

Training Used Category	% Frequency
Previous intelligence experience	10.1%
Previous military experience	8.0%
DIS/NIS [data invalid; cf. VAR208]	
Photointerpretation/photographic experience	5.2%
Intelligence training courses	9.5%
Foreign language training	1.5%
ADP training or experience	5.8%
Professional military education	5.8%
Professional training	9.2%

VAR208 "Defense Intelligence School Graduate" - A "3" code in VAR019 was combined with data in VAR208 to produce these statistics.

DIS/NIS graduate?	# of respondents	% of total
Yes	139	42.8%
No	141	43.4%
Status unknown	45	13.8%
	325	

VAR020 "Respondent's First Intelligence Billet" -

First intelligence tour?	# of respondents	% of total
Yes, first	44	13.5%
No, not first	278	85.5%
Status unknown	3	0.9%
	325	

VAR021 "Years Previous Intelligence Experience" -

Mean	Standard Deviation
8.1 years	6.0 years

VAR022 "Months in Billet" -

Mean	Standard Deviation
16.9 months	14.5 months

C. PRESENTATION OF FUNCTIONAL PARAMETER DATA

VAR003 "Billet Title" - Refer to organizational parameter data.

VAR011 "Respondent's Rank" - Refer to personal parameter data.

VAR013 "Respondent's Designator" - Refer to personal parameter data.

VAR016 "Billet Subspecialty Code" - Refer to organizational parameter data.

VAR019 "Training Used in Billet" - Refer to personal parameter data.

VAR025-VAR058 "Output Variables from First Iteration of Delphi A" - The aggregate results for the output variables are listed in Table G-1. Column 1 contains the variable number; column 2 lists the variable name; column 3 presents the percentage of respondents

TABLE G-1

OUTPUT PERCENTAGE VARIABLES — FIRST ITERATION OF DELPHI A

Variable Number	Variable Name	Percentage Respondents Reporting Output	Mean Percentage For Billets Reporting Output
VAR025	Intelligence Office Administration	80.3%	22.7%
VAR027	Briefs and Debriefs	72.3%	9.1%
VAR029	Budgets and Budgeting	49.8%	6.0%
VAR031	Charts and Audio-Visual Aids	44.6%	4.5%
VAR033	Counterintelligence Studies	12.6%	4.5%
VAR035	Data Analysis	54.5%	14.6%
VAR037	Decisions and Recommendations	80.6%	16.4%
VAR039	Estimates	40.3%	8.9%
VAR041	Intelligence Annexes to OPORDs	22.8%	5.3%
VAR043	Intelligence Collection Plans	31.4%	5.6%
VAR045	Intelligence Collection Tasking	49.1%	7.1%
VAR047	Intelligence Information Reports	33.2%	6.8%
VAR049	Intelligence Studies	47.4%	9.7%
VAR051	Interface with ADP-Telecommunications	48.9%	11.6%
VAR053	Orders-of-Battle	26.5%	4.7%
VAR055	Physical Security	50.5%	3.5%
VAR057	Tactical Plots	20.0%	4.6%

Based on 325 cases

indicating more than zero percent of their time working on that output; column 4 is the mean time spent in conjunction with that output by those respondents listed in column 3. The even variable numbers from VAR026 through VAR058 indicated the measure of applicability of the associated output to the naval intelligence community. These variables were not used in the research.

VAR061-VAR066/VAR069-VAR074/VAR077-VAR079 "Additional Outputs - First, Second, Third, Fourth, and Fifth" -

	# of responses	% of 325 respondents
First additional output	138	42.5%
Second additional output	58	17.8%
Third additional output	32	9.8%
Fourth additional output	14	4.3%
Fifth additional output	5	1.5%
	247	

VAR080 "Percentage Non-Intelligence Related Outputs" - VAR080 was not considered reliable because of two factors: (1) questionnaire responses often indicated that the percentage of time alloted to non-intelligence related outputs was derived by summing all other output percentages and subtracting from 100%; and (2) the second source of error was entered by the researchers, VAR080 being altered if a discrepancy existed in the questionnaire response [e.g., if the total percentage of a questionnaire did not equal 100% then VAR080 was changed to make the total correct]. VAR080 was not used in any analysis of the data.

VAR187-VAR206 "Output Variables - Second Questionnaire" - Table 2 in the data presentation section lists the aggregate results for the second iteration output variables in the same format as Appendix G, Table G-1. VAR205 ["Non-Intelligence Related Outputs"] was omitted for the same reasons that were discussed in the previous section concerning VAR080.

D. PRESENTATION OF EDUCATIONAL PARAMETER DATA

VAR012 "Respondent's Age" - Refer to personal parameter data.

VAR016 "Billet Subspecialty Code" - Refer to organizational parameter data.

VAR017 "Respondent's Subspecialty Code" - Refer to personal parameter data.

VAR018 "Respondent's Education Level" - Refer to personal parameter data.

VAR019 "Training Used in Billet" - Refer to personal parameter data.

VAR208 "Defense Intelligence School Graduate" - Refer to personal parameter data.

VAR087-VAR132 "Interview Data - Educational Levels USED" - The results of the 103 interviews pertaining to USED educational levels is displayed in Table G-2. Columns 3, 4, 5, and 6 represent the levels subjectively evaluated by the researchers as that being used by the billet holder in the performance of his duties. The column level values are defined in Table D-9 of Appendix D, and basically are defined as:

TABLE G-2

INTERVIEW DATA — EDUCATIONAL LEVELS USED

Variable Number	Variable Name	% Not Used "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR087	College Algebra	52.4%	35.9%	9.7%	1.9%
VAR088	Beginning Calculus	72.8%	16.5%	8.7%	1.9%
VAR089	Probability and Statistics	66.0%	22.3%	8.7%	2.9%
VAR090	Advanced Calculus	84.5%	7.8%	5.8%	1.9%
VAR091	Foreign Language	89.3%	7.8%	2.9%	0.0%
VAR092	USSR Area Studies	36.9%	25.2%	32.0%	5.8%
VAR093	China Area Studies	39.8%	27.2%	30.1%	2.9%
VAR094	Middle East Area Studies	53.4%	31.1%	15.5%	0.0%
VAR095	European Area Studies	65.0%	23.3%	11.7%	0.0%
VAR096	Latin American Area Studies	73.8%	18.4%	7.8%	0.0%
VAR097	African Area Studies	81.6%	13.6%	4.9%	0.0%
VAR098	Operations Analysis	50.5%	38.8%	10.7%	0.0%
VAR099	International Relations Theory	53.4%	27.2%	17.5%	1.9%
VAR100	Underwater Acoustics	45.6%	34.0%	18.4%	1.9%
VAR101	Sonar Systems	53.4%	29.1%	15.5%	1.9%
VAR102	Communication Systems	34.0%	36.9%	26.2%	2.9%
VAR103	Radar Systems	45.6%	31.1%	20.4%	2.9%
VAR104	Optics	61.2%	28.2%	9.7%	1.0%
VAR105	Lasers	66.0%	24.3%	8.7%	1.0%
VAR106	Collection Systems	34.0%	34.0%	27.2%	4.9%

TABLE G-2 (Continued)

INTERVIEW DATA — EDUCATIONAL LEVELS USED

Variable Number	Variable Name	% Not Used "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR107	National/Naval Budgetary Process	31.1%	38.8%	25.2%	4.9%
VAR108	Threat and Net Assessment	46.6%	29.1%	20.4%	3.9%
VAR109	National Security & Intelligence Organization	6.8%	21.4%	55.3%	16.5%
VAR110	Soviet Navy	32.0%	16.5%	40.8%	10.7%
VAR111	Soviet Air Force	39.8%	21.4%	34.0%	4.9%
VAR112	Soviet Ground Forces	44.7%	33.0%	20.4%	1.9%
VAR113	Soviet PVO	44.7%	30.1%	23.3%	1.9%
VAR114	Soviet Strategic Rocket Troops	44.7%	29.1%	23.3%	2.9%
VAR115	Soviet Merchant/Fish/Oceanographic	39.8%	29.1%	24.3%	6.8%
VAR116	Blue Forces Collection Systems	15.5%	16.5%	54.4%	13.6%
VAR117	U.S. Naval Forces	45.6%	30.1%	18.4%	5.8%
VAR118	U.S. Non-Naval Forces	65.0%	20.4%	11.7%	2.9%
VAR119	Allied Capability	46.6%	29.1%	23.3%	1.0%
VAR120	ADP System Design/Management	32.0%	35.0%	28.2%	4.9%
VAR121	ADP Hardware Operations	67.0%	11.7%	16.5%	4.9%
VAR122	ADP Software and Programming	65.0%	20.4%	11.7%	2.9%
VAR123	ADP Basic Interface Operations	12.6%	49.5%	33.0%	4.9%
VAR124	Briefing	13.6%	25.2%	46.6%	14.6%
VAR125	Writing	14.6%	28.2%	41.7%	15.5%

TABLE G-2 (Continued)

INTERVIEW DATA — EDUCATIONAL LEVELS USED

Variable Number	Variable Name	% Not Used "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR126	Organization of Thought	31.1%	17.5%	36.9%	14.6%
VAR127	Collection System Management	65.0%	11.7%	17.5%	5.8%
VAR128	PERT	78.6%	15.5%	4.9%	1.0%
VAR129	Management by Objectives	62.1%	20.4%	13.6%	3.9%
VAR130	Personnel Management	33.0%	31.1%	30.1%	5.8%
VAR131	Financial Management	35.9%	28.2%	29.1%	6.8%
VAR132	Labor Relations	49.5%	32.0%	14.6%	3.9%

Based on 103 interviews

"1" = not used
"2" = basic knowledge
"3" = working knowledge
"4" = expert knowledge

VAR137-VAR182 "Interview Data - Educational Levels NEEDED" - The results of the 103 interviews pertaining to NEEDED educational levels is displayed in Table G-3. Columns 3, 4, 5, and 6 represent the levels subjectively evaluated by the researchers as that being needed by the billet holder in the performance of his duties. The column level values are defined in Table D-9 of Appendix D, and basically are defined as:

"1" = not needed
"2" = basic knowledge
"3" = working knowledge
"4" = expert knowledge

VAR213-VAR343 "Delphi 'B' Data - Educational Levels - USED, NEEDED, and FUTURE" - These variables were used to obtain each respondent's estimate of the level of education (1) that he USED in the performance of his billet tasks [Table G-4], (2) that he NEEDED to properly perform his billet tasks [Table G-5], and (3) his prediction of the levels that will be needed ten years in the FUTURE [Table G-6]. The Delphi data represents the respondents' subjective judgments of the same educational areas coded from the interview data. Again, columns 3, 4, 5, and 6 represent the levels evaluated by the respondents with the same coding scheme defined in Table D-9 of Appendix D and used to describe the interview data.

TABLE G-3

INTERVIEW DATA — EDUCATIONAL LEVELS NEEDED

Variable Number	Variable Name	% Not Needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR137	College Algebra	45.6%	37.9%	13.6%	2.9%
VAR138	Beginning Calculus	67.0%	19.4%	10.7%	2.9%
VAR139	Probability and Statistics	46.6%	28.2%	18.4%	6.8%
VAR140	Advanced Calculus	77.7%	14.6%	5.8%	1.9%
VAR141	Foreign Language	68.0%	8.7%	21.4%	1.9%
VAR142	USSR Area Studies	31.1%	17.5%	29.1%	22.3%
VAR143	China Area Studies	33.0%	16.5%	30.1%	20.4%
VAR144	Middle East Area Studies	46.6%	17.5%	29.1%	6.8%
VAR145	European Area Studies	57.3%	17.5%	20.4%	4.9%
VAR146	Latin American Area Studies	61.2%	23.3%	15.5%	0.0%
VAR147	African Area Studies	68.0%	19.4%	12.6%	0.0%
VAR148	Operations Analysis	24.3%	30.1%	41.7%	3.9%
VAR149	International Relations Theory	41.7%	15.5%	28.2%	14.6%
VAR150	Underwater Acoustics	35.9%	20.4%	36.9%	6.8%
VAR151	Sonar Systems	43.7%	17.5%	35.0%	3.9%
VAR152	Communication Systems	31.1%	14.6%	39.8%	14.6%
VAR153	Radar Systems	39.8%	19.4%	35.0%	5.8%
VAR154	Optics	50.5%	19.4%	28.2%	1.9%
VAR155	Lasers	54.4%	20.4%	23.3%	1.9%
VAR156	Collection Systems	26.2%	12.6%	47.6%	13.6%

TABLE G-3 (Continued)

INTERVIEW DATA — EDUCATIONAL LEVELS NEEDED

Variable Number	Variable Name	% Not Needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR157	National/Naval Budgetary Process	27.2%	25.2%	25.2%	22.3%
VAR158	Threat and Net Assessment	44.7%	13.6%	22.3%	19.4%
VAR159	National Security & Intelligence Organization	6.8%	10.7%	37.9%	44.7%
VAR160	Soviet Navy	29.1%	9.7%	26.2%	35.0%
VAR161	Soviet Air Force	36.9%	9.7%	27.2%	26.2%
VAR162	Soviet Ground Forces	37.9%	16.5%	25.2%	20.4%
VAR163	Soviet PVO	38.8%	17.5%	23.3%	20.4%
VAR164	Soviet Strategic Rocket Troops	37.9%	17.5%	24.3%	20.4%
VAR165	Soviet Merchant/Fish/Oceanographic	33.0%	16.5%	23.3%	27.2%
VAR166	Blue Forces Collection Systems	10.7%	14.6%	32.0%	42.7%
VAR167	U.S. Naval Forces	38.8%	18.4%	31.1%	11.7%
VAR168	U.S. Non-Naval Forces	53.4%	14.6%	23.3%	8.7%
VAR169	Allied Capability	43.7%	6.8%	37.9%	11.7%
VAR170	ADP System Design/Management	26.2%	17.5%	34.0%	22.3%
VAR171	ADP Hardware Operations	64.1%	9.7%	10.7%	15.5%
VAR172	ADP Software and Programming	59.2%	16.5%	18.4%	5.8%
VAR173	ADP Basic Interface Operations	11.7%	23.3%	36.9%	28.2%
VAR174	Briefing	13.6%	12.6%	33.0%	40.8%
VAR175	Writing	12.6%	11.7%	28.2%	46.6%

TABLE G-3 (Continued)

INTERVIEW DATA — EDUCATIONAL LEVELS NEEDED

Variable Number	Variable Name	% Not Needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR176	Organization of Thought	29.1%	5.8%	17.5%	47.6%
VAR177	Collection System Management	52.4%	15.5%	15.5%	16.5%
VAR178	PERT	50.5%	17.5%	23.3%	8.7%
VAR179	Management by Objectives	39.8%	15.5%	30.1%	14.6%
VAR180	Personnel Management	30.1%	14.6%	24.3%	31.1%
VAR181	Financial Management	31.1%	16.5%	26.2%	26.2%
VAR182	Labor Relations	41.7%	22.3%	18.4%	17.5%

Based on 103 interviews

"1" = not needed or not used
"2" = basic knowledge
"3" = working knowledge
"4" = expert knowledge

TABLE G-4

DELPHI "B" DATA — EDUCATIONAL LEVELS USED

Variable Number	Variable Name	% Not Used "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR213	College Algebra	57.3%	31.2%	8.8%	2.7%
VAR216	Beginning Calculus	82.7%	10.8%	4.2%	2.3%
VAR219	Advanced Calculus	90.0%	5.8%	2.7%	1.5%
VAR222	Probability and Statistics	50.0%	34.2%	13.1%	2.7%
VAR225	Foreign Language	83.1%	12.3%	3.8%	0.8%
VAR228	USSR Area Studies	40.5%	34.0%	20.8%	4.6%
VAR231	China Area Studies	55.8%	29.5%	12.0%	2.7%
VAR234	Middle East Area Studies	48.6%	35.1%	14.7%	1.5%
VAR237	European Area Studies	52.5%	32.4%	12.0%	3.1%
VAR240	Latin American Area Studies	71.4%	22.8%	5.0%	0.8%
VAR243	African Area Studies	67.6%	27.4%	3.9%	1.2%
VAR246	Operations Analysis	46.3%	41.7%	10.8%	1.2%
VAR249	International Relations Theory	40.2%	38.6%	17.8%	3.5%
VAR252	Underwater Acoustics	39.4%	45.2%	13.5%	1.9%
VAR255	Sonar Systems	40.2%	45.9%	12.4%	1.5%
VAR258	Communication Systems	23.6%	51.4%	22.8%	2.3%
VAR261	Radar Systems	28.6%	55.2%	13.9%	2.3%
VAR264	Optics	43.5%	46.2%	9.2%	1.2%
VAR267	Lasers	50.8%	41.5%	6.5%	1.2%
VAR270	Collection Systems	11.2%	44.4%	36.3%	8.1%

TABLE G-4 (Continued)

DELPHI "B" DATA — EDUCATIONAL LEVELS USED

Variable Number	Variable Name	% Not used "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR278	Threat and Net Assessment	18.1%	41.7%	30.9%	9.3%
VAR281	National Security & Intelligence Organization	6.9%	39.0%	40.2%	13.9%
VAR284	Soviet Navy	13.9%	23.6%	45.9%	16.6%
VAR287	Soviet Air Force	19.6%	40.4%	33.8%	6.2%
VAR290	Soviet Ground Forces	35.8%	48.1%	14.6%	1.5%
VAR293	Soviet Strategic Rocket Troops	32.0%	45.6%	18.9%	3.5%
VAR296	Soviet Merchant/Fish/Oceanographic	22.8%	45.9%	24.3%	6.9%
VAR299	U.S. Naval Forces	11.5%	39.2%	42.7%	6.5%
VAR302	U.S. Non-Naval Forces	17.7%	60.4%	20.0%	1.9%
VAR305	Allied Capability	16.9%	58.5%	22.7%	1.9%
VAR308	ADP System Design/Management	42.9%	41.3%	11.2%	4.6%
VAR311	ADP Hardware Operations	44.8%	41.7%	10.4%	3.1%
VAR314	ADP Software and Programming	55.0%	36.9%	5.0%	3.1%
VAR317	ADP Basic Interface Operations	33.8%	47.3%	16.2%	2.7%
VAR320	Management by Objectives	16.6%	41.3%	32.4%	9.7%
VAR323	Personnel Management	17.8%	37.1%	36.3%	8.9%
VAR326	Financial Management	35.1%	40.2%	19.7%	5.0%
VAR329	National/Naval Budgetary Process	38.2%	36.3%	21.2%	4.2%
VAR332	Labor Relations	57.5%	32.0%	8.1%	2.3%
VAR335	Briefing	2.7%	17.0%	49.4%	30.9%
VAR338	Writing	0.4%	8.9%	49.4%	41.3%
VAR341	Organization of Thought	0.4%	7.7%	47.1%	44.8%

Based on 259 Delphi responses

TABLE G-5

DELPHI "B" DATA — EDUCATIONAL LEVELS NEEDED

Variable Number	Variable Name	% Not Needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR214	College Algebra	54.4%	31.3%	12.4%	1.9%
VAR217	Beginning Calculus	76.1%	15.4%	6.9%	1.5%
VAR220	Advanced Calculus	86.0%	8.5%	4.3%	1.2%
VAR223	Probability and Statistics	35.1%	37.8%	24.7%	2.3%
VAR226	Foreign Language	64.0%	21.7%	12.4%	1.9%
VAR229	USSR Area Studies	30.9%	30.9%	33.2%	5.0%
VAR232	China Area Studies	48.4%	26.7%	22.1%	2.7%
VAR235	Middle East Area Studies	45.5%	32.3%	19.1%	3.1%
VAR238	European Area Studies	49.0%	29.2%	17.5%	4.3%
VAR241	Latin American Area Studies	65.4%	24.5%	9.3%	0.8%
VAR244	African Area Studies	62.3%	28.0%	8.6%	1.2%
VAR247	Operations Analysis	28.2%	46.3%	22.8%	2.7%
VAR250	International Relations Theory	30.1%	39.8%	25.1%	5.0%
VAR253	Underwater Acoustics	32.4%	36.7%	28.2%	2.7%
VAR256	Sonar Systems	31.3%	42.1%	23.9%	2.7%
VAR259	Communication Systems	17.0%	43.6%	34.4%	5.0%
VAR262	Radar Systems	22.8%	47.9%	25.5%	3.9%
VAR265	Optics	32.9%	43.4%	22.1%	1.6%
VAR268	Lasers	34.9%	44.2%	19.4%	1.6%
VAR271	Collection Systems	9.7%	28.6%	46.7%	15.1%
VAR279	Threat and Net Assessment	12.7%	33.6%	39.8%	13.9%

TABLE G-5 (Continued)

DELPHI "B" DATA — EDUCATIONAL LEVELS NEEDED

Variable Number	Variable Name	% Not Needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR282	National Security & Intelligence Organization	5.4%	28.2%	47.1%	19.3%
VAR285	Soviet Navy	12.7%	19.7%	42.5%	25.1%
VAR288	Soviet Air Force	16.7%	35.3%	37.2%	10.9%
VAR291	Soviet Ground Forces	30.6%	47.3%	19.8%	2.3%
VAR294	Soviet Strategic Rocket Troops	28.2%	40.9%	27.8%	3.1%
VAR297	Soviet Merchant/Fish/Oceanographic	17.4%	40.5%	34.4%	7.7%
VAR300	U.S. Naval Forces	10.1%	27.9%	49.6%	12.4%
VAR303	U.S. Non-Naval Forces	15.5%	46.9%	33.3%	4.3%
VAR306	Allied Capability	13.6%	44.2%	37.6%	4.7%
VAR309	ADP System Design/Management	32.4%	33.2%	27.4%	6.9%
VAR312	ADP Hardware Operations	37.1%	34.0%	25.1%	3.9%
VAR315	ADP Software and Programming	40.7%	38.4%	18.2%	2.7%
VAR318	ADP Basic Interface Operations	23.6%	41.1%	30.6%	4.7%
VAR321	Management by Objectives	12.4%	28.2%	43.6%	15.8%
VAR324	Personnel Management	14.7%	29.0%	43.6%	12.7%
VAR327	Financial Management	27.8%	32.4%	32.8%	6.9%
VAR330	National/Naval Budgetary Process	31.7%	30.9%	30.1%	7.3%
VAR333	Labor Relations	52.9%	28.6%	15.1%	3.5%
VAR336	Briefing	1.9%	11.6%	47.5%	39.0%
VAR339	Writing	0.4%	4.6%	43.6%	51.4%
VAR342	Organization of Thought	0.4%	3.5%	38.6%	57.5%

Based on 259 Delphi responses

TABLE G-6

DELPHI "B" DATA — EDUCATIONAL LEVELS IN FUTURE

Variable Number	Variable Name	% Not needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR215	College Algebra	49.2%	34.1%	14.0%	2.7%
VAR218	Beginning Calculus	68.2%	21.7%	7.8%	2.3%
VAR221	Advanced Calculus	80.9%	12.8%	4.3%	1.9%
VAR224	Probability and Statistics	29.1%	32.9%	30.6%	7.4%
VAR227	Foreign Language	60.5%	17.8%	18.6%	3.1%
VAR230	USSR Area Studies	28.7%	26.4%	37.2%	7.8%
VAR233	China Area Studies	45.5%	23.0%	26.8%	4.7%
VAR236	Middle East Area Studies	44.0%	29.6%	20.2%	6.2%
VAR239	European Area Studies	47.1%	26.5%	21.0%	5.4%
VAR242	Latin American Area Studies	61.5%	24.5%	11.7%	2.3%
VAR245	African Area Studies	56.8%	30.0%	10.5%	2.7%
VAR248	Operations Analysis	25.6%	35.7%	33.3%	5.4%
VAR251	International Relations Theory	28.3%	31.0%	32.2%	8.5%
VAR254	Underwater Acoustics	30.6%	32.2%	32.6%	4.7%
VAR257	Sonar Systems	29.8%	35.3%	20.6%	4.3%
VAR260	Communication Systems	16.3%	34.5%	39.9%	9.3%
VAR263	Radar Systems	21.3%	41.5%	31.0%	6.2%
VAR266	Optics	28.3%	37.2%	31.0%	3.5%
VAR269	Lasers	28.3%	37.2%	29.8%	4.7%
VAR272	Collection Systems	9.7%	25.3%	43.6%	21.4%
VAR280	Threat and Net Assessment	12.4%	24.0%	42.2%	21.3%

TABLE G-6 (Continued)

DELPHI "B" DATA — EDUCATIONAL LEVELS IN FUTURE

Variable Number	Variable Name	% Not Needed "1"	% Basic "2"	% Working "3"	% Expert "4"
VAR283	National Security & Intelligence Organization	5.8%	22.9%	45.3%	26.0%
VAR286	Soviet Navy	12.0%	16.3%	39.9%	31.8%
VAR289	Soviet Air Force	15.5%	30.6%	38.4%	15.5%
VAR292	Soviet Ground Forces	27.9%	44.2%	24.4%	3.5%
VAR295	Soviet Strategic Rocket Troops	26.4%	37.6%	29.5%	6.6%
VAR298	Soviet Merchant/Fish/Oceanographic	16.3%	36.4%	36.0%	11.2%
VAR301	U.S. Naval Forces	9.3%	26.1%	45.9%	18.7%
VAR304	U.S. Non-Naval Forces	14.8%	41.6%	37.7%	5.8%
VAR307	Allied Capability	12.8%	37.7%	41.2%	8.2%
VAR310	ADP System Design/Management	24.8%	29.5%	32.6%	13.2%
VAR313	ADP Hardware Operations	27.5%	33.7%	31.4%	7.4%
VAR316	ADP Software and Programming	29.8%	38.0%	26.4%	5.8%
VAR319	ADP Basic Interface Operations	15.9%	32.2%	41.1%	10.9%
VAR322	Management by Objectives	10.1%	25.7%	39.3%	24.9%
VAR325	Personnel Management	13.2%	25.2%	43.3%	18.2%
VAR328	Financial Management	25.2%	27.9%	36.0%	10.9%
VAR331	National/Naval Budgetary Process	27.1%	29.1%	32.2%	11.6%
VAR334	Labor Relations	48.1%	29.1%	17.8%	5.0%
VAR337	Briefing	1.9%	8.5%	45.0%	44.6%
VAR340	Writing	0.4%	3.5%	38.4%	57.8%
VAR343	Organization of Thought	0.4%	2.3%	33.3%	64.0%

Based on 259 Delphi responses

APPENDIX H

80-COLUMN PRINT OF "INTELL" DATA BASE
(QID12CDS)

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NOSIC                    19070HEAD,MARITIME OPERATIONS BRANCH    308830DC22011
/LOUIS /A. /ROGERS                       43511100000000007210E7210E13    100212012
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INTER AGENCY LIAISON            F  005OUTGOING REPORTS                A  0152015
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NOSIC                    19300ADP OPINTEL PRODUCTION MANAGER     308830DC22021
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/CHARLES /C. /SHERWOOD                        4446632999999990000000000004    100132042
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PHOTOGRAPHIC SUPPORT                 ABF084                                  0002044
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COMMENTS SUPPRESSED                                                            12047
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NISC HOFFMAN             05050HEAD ASM TASK FORCE                     681660VA22051
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/JAMES /E. /TUTHILL                           4476632000000000000000000004    100022062
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PRODUCTION COORDINATION              BDF050                                  0002074
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COMMENTS SUPPRESSED                                                            02077
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                                     000000                                      2086
COMMENTS SUPPRESSED                                                             02087
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NISC HOFFMAN              00441HEAD, PRODUCTION MANAGEMENT DIVISION 681660VA22091
/ROBERT /P. /STEWART                         43311100000000000000008710P4   100012092
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/HAROLD /T. /KELLY                           539163013500000000000000014    009032112
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/WILLIAM /M. /RUSS, /JR.                     54011201100000072109721OS1    002162122
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NISC SUITLAND               00105EXECUTIVE OFFICER                 681660DC22131
/BURKE /E. /EAKLE                            6491310000000000000007210S229  002202132
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NISC HOFFMAN                00435HEAD, BALLISTIC MISSILE SYSTEM DIV   681660VA22141
/KEITH /M. /WERNER                           43211200000000072109721OP139   100132142
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COMMENTS SUPPRESSED                                                          22147
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NISC HOFFMAN                00505HEAD, PRODUCTION MANAGEMENT DIVISION 681660VA22151
/DAVID /A. /COTNER                           43513200000000007210E7210S19   006152152
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/RICHARD /H. /DOLLIVER                   44211200000000000007210E13   005122162
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NISC SUITLAND            00500HEAD, INFORMATION SYSTEMS DIVISION        681660DC22171
/GREGORY /A. /MICHAELS                   43416301355000099999999917   010302172
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/GROVER /S. /PERKINS, /JR.               43916101615000000000000019   100142182
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CONTRACT SUPPORT                   BDE003                                    0002184
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/DAVID /H. /KRIEGER                      43111200000000000000000013   005022192
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/JAMES /A. /SAGERHOLM                          64611201110000096709967091 3   001072202
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NISC SUITLAND              00315ASSISTANT FOR PLANS AND PROGRAMS            681660DC22211
/ERNEST /W. /LIETZAN, /JR.                     5421630000000000000000000002   018122212
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NIPSSA HOFFMAN             00500COMMS PLANS/MANAGEMENT OFFICER              634200VA22221
/WILLIAM /E. /SMITH                            43416301350135593105000000257  005202222
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INTELCOMM RESOURCE MGT           CFD025INTELCOMM PLANS AND MANAGEMENT      BF0025 2224
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/JOHN /S. /LIERMAN                             43616300000000009210P7210P13   012132232
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/DONALD /E. /BUCKIUS                             4456462000000000000000000     002062242
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/ANTHONY /NESKY, /JR.                            5451310131500008530P7210S17   010222252
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/MARTIN /KATZ                                    546111000000009210P000002     100222262
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/CHARLES /W. /KIRCHOFF                          43316309999999972l0E000001    006122292
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/JOSEPH /P. /KETTINGER                          43516101105000000000000001    100042312
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/JACK /DARNELL                                  59916309999999999999999999     999992322
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06RANK /A. /MITCHELL                            6481110999999999999997210E22    006024002
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/R. /W. /MORSCHES                               5401630135099999999999999219    017034012
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/VINCENT /H.#/DE /VITO                          443111011001108999997210E11    003604022
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/PAUL /H. /KEAST                             540163099999999999997310S28    019054032
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                                   000000                                       4036
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NISHQ                        00300COUNTER INTELLIGENCE ANALYST          632850VA34041
/THOMAS /E. /LEACH                           4371630135599999999999990      007114042
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STAFF SUPPORT                          BGI010                                0004044
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/THOMAS /A. /BROOKS                          538163099999999999999111P4     016024052
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SPECIAL PROJECT STAFF SUPPORT   BFK023INTELLIGENCE LIAISON                EF 0104054
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/RICHARD /E. /WILTAMUTH                      4361610999999999999999999942   100044062
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/JOSEPH /E. /PELTON                            437163016351355999997210E13      009034072
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/LLOYD /H. /BEACHY                             43816301350999999999999919       014304082
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/HOLLIS /W. /HARMON                            43216301310110099999999912       003064092
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/PAUL /R. /BORCIK                              43216301105999999999999992       004074102
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3334444443333333333334222233222112112112222322211333211444444444              1054108
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/MERRILL /D. /REICH                     54416109999999997210E99999228   002014112
030100110011000100010001007100010001000100010101010100110001000100001      4113
LIAISON WITH OTHER AGENCIES      EF 040                                  0004114
                                    000                                  0004115
                                    000000                                  4116
COMMENTS SUPPRESSED                                                         14117
99999999999999999999999999999999999999999999999                          9014118
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025010005010010022000000000000000000000000100030000000000000005        011034118
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33333333333332222222333333222222123112112222323323323323322233333333      1054118
NFOIO                    99999HEAD NAVAL WARFARE BRANCH              999370MD34121
/THOMAS /M. /TAIT                       43811209999999997210E7210 423   003264122
01010151000900090009020100510251000900210021001101010009000900090009      4123
LIAISON AND SPECIAL SUPPORT      EF 010                                  0004124
                                    000                                  0004125
                                    000000                                  4126
COMMENTS SUPPRESSED                                                         14127
99999999999999999999999999999999999999999999999                          9014128
99999999999999999999999999999999999999999999999                          9024128
015005000003015020000000002002000000000000000000000000000000002        001034128
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33322234433322222223334423323312212212212323323323322322234433334 4      1054128
NFOIO                    62930DIR OF SUPPORT DIV                     629300MD34131
/STEPHEN /PORTENLANGER                  43616301350110572 10E7210S21    007284132
07010001000100010001000101010001000100010001000100010001000100010001      4133
LIAISON WITH NATIONAL AGENCY     DEJ005SIGINT PRODUCT DISTRIBUTION    AF 0054134
                                    000                                  0004135
                                    000010                                  4136
COMMENTS SUPPRESSED                                                         04137
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045005001015000015000000000000000000000000002000002000010005          021034138
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CTF 168                  00300OPERATIONS OFFICER                     999140VA34141
/ZENO /J. /PFAU, /JR.                   4361630110099999999999999929    011254142
00510051000905010001020101010009000900090009000900090101000900090009      4143
                                    000                                  0004144
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COMMENTS SUPPRESSED                                                         14147
11111322231222333223233322222322222223333121 12                           1014148
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005005000010005005050000000200000000000000000301000000100000 2002      021034148
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CTF 168                    00200DEP      TY COMMANDER                     999140VA34151
/WILLIAM /D. /DERRYBERRY                          5371630135099997210E9610S1    014164152
07510051005100090009000901210009000900090009000900090009000900110009             4153
                                    000                                       0004154
                                    000                                       0004155
                                    000002                                       4156
COMMENTS SUPPRESSED                                                             04157
1111133333212233223223333333322221223333 12112                               1014158
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0600200000100000050000000000000000000000000000000000001003000001            021034158
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122233233122111111233133122122111111111111244133133133122222333333           1054158
CTF 168                    99999PROJECT OFFICER                           999140VA34161
/W. /R. /KOEPKE                                   43316301110999999999999991    003264162
00090009000909700009000900090009000900090009000900090009000900090009             4163
                                    000                                       0004164
                                    000                                       0004165
                                    000003                                       4166
COMMENTS SUPPRESSED                                                             14167
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00500000000000001508000000000000000000000000000000000000000000             021034168
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999999999999999999999999999999999999999999999999999999999999999999           1054168
NFOIC                      99999HEAD ASAIN NAVIES BRANCH                  629300MD34171
/RICHARD /R. /PARISEAU                            435112099999999999999999994   001104172
00110081000900210009023100310101000900090011000903210009005100090009             4173
RESEARCH                          DIJ015                                      0004174
                                    000                                       0004175
                                    000000                                       4176
COMMENTS SUPPRESSED                                                             04177
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NFOIO                      00130DIRECTOR INTEL ANALYSIS DIVISION          629300MD34181
/RICHARD /F. /CASEY                               5391630999999999999999994     018244182
10010009000900090009000900090009000900090009000900090009000900090009             4183
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                                    000000                                       4186
COMMENTS SUPPRESSED                                                             04187
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/ROBERT /G.#/MC /GANN                       537111099999997210E7210E2      005114192
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CONFERENCES AND MEETINGS            EF 005INTELLIGENCE SUPPORT               0154194
                                       000                                   0004195
                                       000010                                   4196
COMMENTS SUPPRESSED                                                            04197
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NFOIO                        15000PRODUCTION SUPPORT                    999370MD34201
/MARSHALL /W. /BRONSON                      435163011009999999999992       006244202
0700000900100091000900500151000900090009000900090009000900090009              4203
                                       000                                   0004204
                                       000                                   0004205
                                       000000                                   4206
COMMENTS SUPPRESSED                                                            04207
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NFOID                        003300PERATIONAL INTEL ANALYST             629300MD34211
/STANLEY /E. /KRASNEIWSKI                   43413209999999997210E7210S2    100064212
0031008100010021000104010061002100090001003102010121000900210010001l          4213
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                                       000000                                   4216
COMMENTS SUPPRESSED                                                            04217
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COMNAVINTCOM                 00160DUPTY PRODUCTION DISSEMINATION OP CTR000150VA34221
/LAWRENCE /M. /CLARKE, /JR.                 432163013501355999997210E22    008054222
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                                       000000                                   4226
COMMENTS SUPPRESSED                                                            14227
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/JOHN /W. /OVERSTREET                           4351630111099999999999999123    004044232
0051002100710001000100010201000100010001020100010001000100010001000100010001       4233
LIAISON WITH FOREIGN GOVTS         EGQ015LIAISON WITH OTHER AGENCIES          EFG0154234
INTEL COLLECTION MANAGEMENT        BLM015                                        0004235
                                      000001                                        4236
COMMENTS SUPPRESSED                                                                04237
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0070150070200020270000000000000000000002000000100000000000001000            001034238
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2223342232232232232233333333333311111111122222222222222222222223344444       1054238
COMNAVINTCOM                  00640HEAD MANPOWER TRAINING DIV          000150VA34241
/LAWRENCE /F. /REDDER                           44116301350999999999999999915    010484242
0009005100510009000900090891000900090009000900090009000900090011000 9              4243
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                                      000                                        0004245
                                      000000                                        4246
COMMENTS SUPPRESSED                                                                14247
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DIA                           01380ADI(N)                              634150DC34251
/JOHN /F. /BARLOW                               651131099999999999999999991       100364252
0001008100010021000100010901000100010001000100010001000100010001000100010001       4253
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                                      000                                        0004255
                                      000000                                        4256
COMMENTS SUPPRESSED                                                                24257
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999999999999999999999999999999999999999999999999999999999999999999999        0054258
COMNAVINTCOM                  01780HEAD OSIS DIV                       000150VA34261
/THOMAS /R. /CHANDLER                           43716301100999999999997160P4      012074262
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                                      000                                        0004265
                                      000000                                        4266
COMMENTS SUPPRESSED                                                                14267
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CTF 168                    00100COMMANDER TASK FROCE 168                  999140VA34271
/JOEY /W. /HEGEMAN                               5401630110099997210E9999912   009174272
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                                     000                                     0004274
                                     000                                     0004275
                                     000000                                     4276
COMMENTS SUPPRESSED                                                            04277
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23423433333222222333233233233222222322222222334334334334333333333             1054278
COMNAVINTCOM               01460DEPUTY HEAD FOREIGN OPS DIVISION          000150VA34281
/GEORGE /E. /FISHER                              43811101100110572105721054   004304282
040100810009002100090009010100090009000901510051000900090009005100009         4283
                                     000                                     0004284
                                     000                                     0004285
                                     000015                                     4286
COMMENTS SUPPRESSED                                                            04287
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2232332222222222222222233222233222112112223333444223222222234444444           1054288
COMNAVINTCOM               00440HEAD ADMIN PERS TRAINING DEPT             000150VA34291
/ROBERT /W. /MILLER                              54116301120999999999999992   005154292
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                                     000                                     0004295
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COMMENTS SUPPRESSED                                                            14297
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DIA                        01540INTEL OFFICER                             634150DC34301
/ROBERT /J. /HOWIE                               4371630135599999999997310S1   008014302
000901010009000900090601005100051000900090009000900090051000900110009         4303
INDICATIONS AND WARNING              DEI010                                  0004304
                                     000                                     0004305
                                     000004                                     4306
COMMENTS SUPPRESSED                                                            04307
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CTF 168                    99999SPECIAL PROJECTS OFFICER                 999140VA34311
/LUKE /F. /MAYER, /JR.                          4341636110099999999997210E1    009124312
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INTEL SUPPORT TO OFFICE              IJD048WRITING FOR TF COMMANDER        ADF0104314
                                          000                                 0004315
                                          000000                                 4316
COMMENTS SUPPRESSED                                                            04317
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COMNAVINTCOM               00200NATIONAL SYS SUPPORT COORDINATOR        000150VA34321
/GARY /H. /ELLIS                                437111099999999999997210E43    006064322
035100510001000100010001020100010001000100010001000100010001000100000001          4323
INTERFACE WITH GOVT NAVY ORGANIZEFG030                                        0004324
                                          000                                 0004325
                                          000010                                 4326
COMMENTS SUPPRESSED                                                            04327
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222234223112111112223334233122112111111112222112112123111223333333           1054328
COMNAVINTCOM               01360HEAD REQUIREMENTS MANAGEMENT DIV        000150VA34331
/P. /F. /MC/KNIGHT                              43816301350999999999999999212  014054332
0151005100090009002100210381000900210101000900351010100510009001100009           4333
INTEL COLLECTION REQUIREMENTS     BLM005                                      0004334
                                          000                                 0004335
                                          000000                                 4336
COMMENTS SUPPRESSED                                                            14337
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COMNAVINTCOM               72000HEAD RESERVE PROGRAMS DEPT              000150VA34341
/CLAYTON /M. /CONGER                            644163713571355999999999991    008024342
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RESERVE INTEL PROBLEMS              BC 020                                    0004344
                                          000                                 0004345
                                          000003                                 4346
COMMENTS SUPPRESSED                                                            04347
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/L. /L. /HERZOG                                   54216301350131099999999999159   007504352
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                                    000013                                                 4356
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COMNAVINTCOM                 00530ASSISTANT FOR OFFICER DISTRIBUTION   000150VA34361
/RICHARD /J. /SCHLAFF                             53716301350135599999111P4       015034362
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                                    000100                                                 4366
COMMENTS SUPPRESSED                                                                    14367
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DIA                          00670SIGINT AND SPECIAL SENSORS DIV             634150DC34371
/CHARLES /R. /CLARK                               642111011209999999997210P1      100334372
0001005101010051000101010201000100010101030100010001000100010001 0001                    4373
EVAL OF RESOURCE EFFECTIVENESS  BEF010                                                0004374
                                    000                                                 0004375
                                    000000                                                 4376
COMMENTS SUPPRESSED                                                                    14377
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DIA                          00810INTELLIGENCE OFFICER                      999380DC34381
/DONALD /A. /KAHLER                               438131099999997210E7210S01      100204382
032100410031000100010041006100010001001100810001010100310001001 10001                    4383
TRAINING(SPECIALIZED INSTRUTION)T  009LOGISTICS                                    BC 0034384
PERSONNEL                        AB 005                                                0004385
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COMMENTS SUPPRESSED                                                                    14387
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/WILLIAM /C. /MARSHALL                          43716301350135599999999914    008154392
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COMMENTS SUPPRESSED                                                          04397
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DIA                         01150FACULTY MEMBER                         999390DC34401
/KENNETH /M. /KIRKPATRICK                        4381310999999997210E7120P42   100134402
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/TRENTWELL /M. /WHITE                            54216301100999999999640 4    008014412
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DIA                         01740INTEL OFFICER                          634150DC34421
/CECIL /G. /COWLING                              44016301350999721 0P999991    004184422
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PRODUCTION OF FINISHED INTEL     BDI020                                     0004424
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                                    000000                                     4426
COMMENTS SUPPRESSED                                                          14427
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DIA                        01370FACULTY D I S                          999390DC34431
/JOHN /A. /MOSER                             53716301635110599999999949    008014432
005100C90009000900090009010100090009000900090009025100090009000900090009        4433
TEACHING INTEL                          T   040COUNSELING INTEL OFFICERS       ET 0204434
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COMMENTS SUPPRESSED                                                                04437
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DIA                        01990METEOROLOGIST                          999400DC34441
/WILLIAM /STEVENS                            5421810153099998610S99999428  100114442
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COMMENTS SUPPRESSED                                                                04447
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DIA                        00740INTEL OFFICER                          634150DC34451
/STEVE /F. /KIME                             43316301120110071 20D9999958  002134452
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COMMENTS SUPPRESSED                                                                14457
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S AND T PRODUCTION REQUIREMENTS BDF040S AND T PRODUCTION TASKING              BD 0204524
S AND T PRODUCTION SCHEDULING   BD 020S AND T PRODUCTION REGISTRY             BD 0104525
GEN BOARDS STUDY GROUPS            005005                                             4526
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/GEORGE /J. /HEIM                                4401630135599999999999914     015224572
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/JAY /G. /LARGREGS                        43413209999999998110P0968442    100124592
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/GERALD /R. /SCHLOMAN                     438163013509999721OE098031   011484602
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/PETER /J. /DOERR                         5411110110099997210E7210S4    004104612
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/DOUGLAS /O. /CHIPLOW                     4371110110099997210E999991    100124622
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/CHARLES /V. /CHOYCE                           64613109999999997210P7210S414   002224632
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/NORMAN /K. /BAKER                             5461310999999999999999991139   002484642
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/BILLY /C. /ECK                                443163013509999999999994       013254662
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DIA                         00240XO DEP DIR FOR PLANS                    634150DC34741
/THOMAS /E. /CARNELL                            4391630999999999999999994    012144742
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AS DIRECTED BY HIGHER AUTHORITY     075                                      0004744
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/FORREST /F. /HEDDEN                         54316351355999999999999994  016014762
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DIA                     00710CHIEF LONG RANGE FORECAST             9993800C34771
/WALLACE /A. /GREENE                         650112099999997160P7210S1   003294772
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/WILLIAM /S. /KOSAR, /JR.                    544151099999998110P9131P4   100524782
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TRAINING MONITOR                   BCF020STUDY AND PROFESSION DEVELOPMENTBT 0154795
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/JAMES /L. /YATES                         54213109999999997210E0726043   100084802
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DIA                        01920INTEL OFFICER                          634150DC34821
/ROBERT /H. /PEEBLES                      44016301350999 7110P9999913    010124822
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COMMENTS SUPPRESSED                                                          04827
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/OSCAR /E. /MITCHELL                    441163013559999999999999914    010024832
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COMMENTS SUPPRESSED                                                        04837
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DIA                       01740INTEL OFFICER                        634150DC34841
/EARLE /L. /SMITH, /JR.                 43616301350999971 20P999992   007044842
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                                   000003                                   4846
COMMENTS SUPPRESSED                                                        04847
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/PHILIP /M. /REITZEL                    44311101100999972 10E9501P113   003794852
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COMMENTS SUPPRESSED                                                        14857
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DIA                       01910INTEL OFFICER                        999400VA34861
/CURTIS /A. /EININGER                   43616351355999999999999999915   007224862
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COMMENTS SUPPRESSED                                                        04867
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DIA                          00480INTEL OFFICER REQUIREMENT CONTROL DIV999380VA34871
/PAUL /E. /SPEIRER, /JR.                    54216301310999972I0E99999115   008264872
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PROCESSING JCS PAPERS                 DFJ040PROCESSING OTHER NAT LEVEL DOC  DFJ0204874
RESPONDING TO SECDEF/JCS TASKINGBEF015                                      0004875
                                        000010                                 4876
COMMENTS SUPPRESSED                                                           14877
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DIA                          00770ASST DEP DIR DIRECTORATE FOR ATTACHE 634150DC34881
/WALTER /N. /MORGAN                         65216301100999972I0P9999941   020134882
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COMMENTS SUPPRESSED                                                           14887
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DIA                          00500INTEL OFFICER                          999380VA34891
/DONALD /C. /ORD                            543131099999999972I0E999994   100424892
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DIA                          01390INTEL OFF                              999440MD34901
/LEON /J. /ENTAS                            43716371357135599999999991135  011024902
0011020100090051003100510051010100210031003100310051002101510021003I         4903
SIOP DRILLS                           BFK003INTEL EXERCISES                BFK0034904
SERE                                  BCT002                                0004905
                                        000005                                 4906
COMMENTS SUPPRESSED                                                           14907
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/JAMES /N. /HOLLARN                           43316301635135599999999913     007134912
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INITIATIVE ESTIMATES                FJ 010                                      0004914
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                                       000000                                      4916
COMMENTS SUPPRESSED                                                               04917
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9999999999999999999999999999999999999999999999999999999999999999999             0054918
DIA                    01340INTEGRATED OFFICER(CANADIAN DEF HQTR)999450DC34921
/CHARLES /E. /BOLING                          43316301350999999999999916     013424922
00510051000100510001065100510051000100010031000100510009000100090009           4923
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                                       000002                                      4926
COMMENTS SUPPRESSED                                                               04927
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9999999999999999999999999999999999999999999999999999999999999                 000034928
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9999999999999999999999999999999999999999999999999999999999999999999             0054928
COMNAVINTCOM           99999NAVAL INTEL ANALYST (CIVILIAN)           000150VA34931
/JOFFRE /A. /HEINECK                          15699999999999999999999941     018034932
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APPLIED U S INT TO FREINDLY NAVSBEF025                                          0004934
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COMMENTS SUPPRESSED                                                               14937
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CTF 168                99999RESOURCE MANAGER (CIVILIAN)              999140VA34941
/SHIRLEY /F. /HELMIG                          1409999999999999999999992      100724942
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COMMENTS SUPPRESSED                                                               14947
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/DAVID /A. /SPETRINO                     1379999999999999999999239   100404952
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                                   000                                 0004955
                                   000005                                 4956
COMMENTS SUPPRESSED                                                      14957
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1111133333323333333333332222333332122333313121                         1024958
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999999999999999999999999999999999999999999999999999999990              0044958
9999999999999999999999999999999999999999999999999999999999999         0054958
OFF OF THE CNO(PENTAGON) 09445DIR EST USIB DEPT SUPPORT DIV       999360DC34961
/E. /L. /JOHNSON                         6451630110011057210P7120D5  015074962
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OPNAV INTEL SUPPORT              BEF012SUPPORT FOR DNI USIB          DEF0054964
                                   000                                 0004965
                                   000000                                 4966
COMMENTS SUPPRESSED                                                      04967
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1221344333324222222234443333333344311134441142 22                      1024968
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DIA                        01280INTEL OFF                         999380VA34971
/TERRY /A. /DAMON                        54413109999999721 0E7210E2128  003404972
08010009000900090009000900510009000900090009000900090151000900090009        4973
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COMMENTS SUPPRESSED                                                      14977
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DIA                        00500INTEL OFF                         634150DC34981
/MARION /J. /KLECZEWSKI                  6491630110099997210E9999914   018204982
01010101003100090009003101010009000900310051000900310101000900090009        4983
INTEL COLLECTION REQUIREMENTS   BLM010IMAGERY EXPLOITATION          IJP0104984
DEVELOPMENTS PLANNING           BCF010USIB PARTICIPATION            DEF0104985
SANITIZATION//DECONTROL         AF0003003                                 4986
COMMENTS SUPPRESSED                                                      14987
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/WENDELL /J. /FURNAS                        65716309999999997210P9999921   031434992
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COMMENTS SUPPRESSED                                                           04997
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DIA                    01200CHIEF TECH AND SUB SYS DIV                   999380VA35001
/JOHN /W. /JOHNSTON                         64813109999999999998110P4      100055002
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INTEL PROD TASKING MONITORING     BLM050                                    0005004
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                                  000005                                       5006
COMMENTS SUPPRESSED                                                           05007
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COMNAVINTCOM           99999HD NAVINT PROCESSING DATA BASE SYS          000150DC35011
/SAMUEL /F. /CARR                           4401630135099999999999999435   011275012
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                                  000007                                       5016
COMMENTS SUPPRESSED                                                           05017
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COMNAVINTCOM           99999PROJECT MANAGER                              000150VA35021
/GARY /W. /GARTON                           134999999999999999999999909    016345022
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CONTRACT MANAGEMENT               CDF010                                    0005024
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DIA                        03910CHINA ASIA DIV DIRECTORATE FOR INTEL 634150DC35031
/ROBERT /E. /PYLE                               64816301100999999999999913    020075032
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                                     000                                    0005035
                                     000010                                    5036
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/ROBERT /RENY                                   4381630163513559999999991     015265042
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                                     000000                                    5046
COMMENTS SUPPRESSED                                                           25047
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DIA                        00169CHIEF PLANNING DIVISION              634150DC35051
/WILLIAM /R. /QUISENBERRY                       651163011009999721OE999991    020095052
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INTELL PLANNING AND MANAGEMENT  ABD035INTELL POLICY                      B  0285054
INTELL OBJECTIVES AND PRIORITIESABI025                                      0005055
                                     000002                                    5056
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DIA                        00300INTELL OFFICER                       634150DC35061
/KEITH /W. /DONOHOE                             43613371357999 9640999991    009035062
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/WILLIAM /W. /J. /PASKO                       434163799999997210E999991     006045072
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CURRICULUM DEVELOPMENT             CDT023VISITING LECTURER COORDINATION  T  0195074
CLASS MONITOR                      T  010PERSONAL AND PROFESSIONAL DEVEL IT 0055075
                                      000005                                    5076
COMMENTS SUPPRESSED                                                            15077
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9999999999999999999999999999999999999999999999999999999999999999               0055078
COMNAVINTCOM                99999DEPUTY HEAD REQUIREMENTS MANGT DIV   000150VA35081
/M. /PENARANDA                                146999999999999999999999990     006085082
070101010009000900090009000900090009020100090009000900090009000 9              5083
                                      000                                    0005084
                                      000                                    0005085
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COMMENTS SUPPRESSED                                                            15087
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COMNAVINTCOM                99999FLEET//INTEL CENTER COORDINATOR      000150VA35091
/MARSHALL /N. /TOWNSEND                       599999999999999999999999999     099995092
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                                      000                                    0005095
                                      000000                                    5096
COMMENTS SUPPRESSED                                                            15097
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CNO (OP 009FIP)             99999SR BRIEFER                           999360DC35101
#/BARTHLOMEU                                  599999999999999999999999999     099995102
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                                      000000                                    5106
COMMENTS SUPPRESSED                                                            15107
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/GEORGE /D. /WALKER                          645111099999997210E7210E92    005145112
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COMMENTS SUPPRESSED                                                            05117
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DIA                       01470INTELLIGENCE OFFICER                    999460DC35121
/MELVIN /A. /WILSON                          4351110110099997210E999992   100075122
015102010000010100410041007101010009000100210151001100210021003100 51           5123
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                                  000000                                        5126
COMMENTS SUPPRESSED                                                            05127
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DIA                       00470FORMER CHF POLICY PLANS PROG AND RQ  999380DC35131
/FRANK /L. /BOUSHEE                          649131099999997210E8113S47    006095132
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CRIT NEAR TERM DEF INTELL OBJECTIJ 005PRES FOR INTELL ADVISORY BOARD         0035134
COLLECTION GUIDANCE MANUALS       002                                        0005135
                                  000000                                        5136
COMMENTS SUPPRESSED                                                            25137
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FOSIC NORFOLK             00200ASST OFFICER IN CHARGE                  669670VA46011
/ROBERT /B. /VOSILUS                         432163011009999 7210E7210E1   003186012
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READING STUDY                   DIJ012                                       0006014
                                  000                                        0006015
                                  000011                                        6016
COMMENTS SUPPRESSED                                                            26017
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/JOHN /DRURY /SIMPSON, /JR.                    432163099999997210E9640 9      009056022
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COMMENTS SUPPRESSED                                                             16027
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CINCLANT                    00680SPECIAL ASST (J20)                   000660VA46031
/LEONARD /L. /TUCKER, /JR.                     5461110999999997210P7210S9      009166032
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ORGANIZATION MANAGEMENT            ABC005TRAINING                          T  0056034
SUPERVISION OF ALL INTELL ADP    BF0015                                       0006035
                                        000000                                   6036
COMMENTS SUPPRESSED                                                             16037
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NAS CECIL FIELD             06650OFFICER IN CHARGE FAISC              602000FL46041
/EUGENE /L. /LASSITER                          44113501320999999999999915      003426042
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MISSION PLANNING ASSISTANCE SIOPDFI025                                        0006044
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COMNAVAIRLANT               22400IOIC COORDINATOR                     570120VA46051
/LOWELL /DOUGLAS /FELPS                        434163013501355921OP000001      010256052
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OP READINESS EVALS                 ADF005ADMIN MATERIAL INSPECTIONS       ABF0016054
ATTENDING MEETINGS CONFERENCES    EF 005                                      0006055
                                        000005                                   6056
COMMENTS SUPPRESSED                                                             06057
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/ROBERT /J. /IANUCCI                     436112099999999999997210S2   007246062
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SPECIAL EQUIPMENTS MANAGEMENT    BCF015                                 0006064
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INVESTIGATORY PROCESS           ABF003COUNTERINTELLIGENCE OPERATIONS  ABH0056074
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COMMENTS SUPPRESSED                                                       06077
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/JOHN /M. /COWART                        4361630135013109999999991    007126082
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INSPECTIONS OF FIELD OFFICES    ABF001ADMIN OF CIV MIL INTELL PERS    ABF0156084
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CINCLANT                  50100IDHS ADP OPS AND SYSTEMS OFFICER J202003660VA46091
/WALTER /J. /RIEDEMANN                   540111099999997210S9210S47   100016092
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MANAGEMENT OF INTELL NIS OFFICE ABC100INTERFACE OPERATORS PLANNERS     BCF0006104
PERSONNEL MANAGEMENT            BFT000NIS OPERATIONS                   ABC0006105
INTELL APPRAISALS POINT PAPERS  DIJ000000                                    6106
COMMENTS SUPPRESSED                                                         26107
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/WILLIAM /H. /KOHN                          43316301635135500000000001    010166132
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TRAVEL ARRANGING TRAVEL         ABC005LIAISON WITH INTELL ACTIVITIES  F  0056134
INTELL COLLECTION RESOURCE MGMT BCL015                                    0006135
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COMMENTS SUPPRESSED                                                         16137
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/ROWLAND /W. /MOORE                             53816301315999999999997160P1   007086152
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COLLATERAL INTELL DUTIES         ABQ043                                         0006154
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                                     000000                                        6156
COMMENTS SUPPRESSED                                                              16157
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/JOHN /VICTOR /CRICCHI                          64411109999999997210E7210E1    009056162
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COMMENTS SUPPRESSED                                                              16167
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/JOHN /H. /COBB                                 43711009999999997200 7200 13   005426172
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BIOGRAPHICS                      AHI002                                         0006174
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BIOGRAPHICS                         AHI002                                   0006184
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                                      000005                                    6186
COMMENTS SUPPRESSED                                                             16187
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CINCLANT                  00760HEAD, NAVAL SECTION J232                 000660VA46191
/JAMES /J. /RALEIGH, /I/I/I                    436163713559999721OB000001    005246192
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COORDINATION OF RESERVE ACDUTRA BCT003CROSS TRAINING W OTHER DIVISIONSBFT0046194
WATCH STANDING (J2 DUTY WARGAME)ADE001ALTERNATE COMMAND POST FUNCTIONSABD0016195
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CINCLANT                  10140DEPUTY COLLECTION RQMTS OFFICER J24A  000660VA46201
/JOSEPH /T. /HOCK                              537111099999999721OE7160D4    100286202
00510051001100110051015101010091000100510201000100010091000100510001            6203
FLEET SUPPORT                       BCF010                                   0006204
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                                      000000                                    6206
COMMENTS SUPPRESSED                                                             06207
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/WILLIAM /N. /CAMPBELL                         644111099999999721OP721OE2    006176212
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COMMENTS SUPPRESSED                                                             06217
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/RONALD /L. /BROWN                          538163013501355721OB7210E1     013256222
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                                   000000                                      6226
COMMENTS SUPPRESSED                                                           06227
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CINCLANT                  99999NAVAL FORCES COLLECTION OFFICE (J242)000660VA46231
/FREDERICK /W. /LEVIN                       436163099999997210B999994      011056232
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NATIONAL RESOURCES MANAGEMENT    BCE001DIRECT FLEET SUPPORT               BFJ0026234
FOREIGN NAVAL LIAISON            EFQ001                                     0006235
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COMMENTS SUPPRESSED                                                           16237
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USS JOHN F KENNEDY        06000INTELLIGENCE OFFICER IOIC SUPERVISOR 033673AF46241
/WALTER /DURAND /POELLNITZ, /I/I/I          435163013509999721OE00000119   010016242
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                                   000002                                      6246
COMMENTS SUPPRESSED                                                           16247
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USS SARATOGA               06000INTELLIGENCE OFFICER                  033603AF46251
/JAMES /L. /LAW                             43516301350999721OS721OS135    013046252
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EAM EMERG ACTION OFFICER         ABQ005                                     0006255
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COMMENTS SUPPRESSED                                                           26257
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/VINCENT /M. /FRAGOMENE                       4331630999999999999999991       009016262
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NISO CHARLESTON             00350EXECUTIVE OFFICER                       630510SC46271
/THOMAS /HOBSON /GUTTERY                      5411630135099990000000000045    016306272
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FOSIF ROTA                  00100OFFICER IN CHARGE                       666001SP46281
/JAMES /M. /EGLIN                             538163013509999721OP000005      014136282
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FICEUR                      00750ANALYST SERVICES RQMTS DIV OFFICER     999120FL46291
/RICHARD /C. /DAVIS                           4401630131099990000000000015    006586292
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SECURITY MANAGER                     AQ 010AD HOC STUDY GROUPS              BDF0026294
PREPARE RESPONSE TO AD HOC TASKSAF 030                                          0006295
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COMMENTS SUPPRESSED                                                               26297
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/RICHARD /J. /WILSON                           53816301120999972I0E9610P48     006136302
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INTELLIGENCE COLLECTION            ALM005SUPERVISION OF COLLECTION EFFORTBLM0156304
CONFERENCE ATTENDANCE              DEF003TRAVEL                                EFG0026305
                                      000001                                        6306
COMMENTS SUPPRESSED                                                                06307
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/GEORGE /F.#/VAN /BUSKIRK                      5451630163511050000000000043    015486322
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FICEUR                     50250MILITARY RQMTS DIVISION OFFICER          999120FL46331
/STEPHEN /E. /HERRICK                          4391630999999990000000000047    010066332
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/WILLIAM /H. /BASS, /I/I/I                   540163099999990000000004   017246342
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/WALTER /D. /JACOBSON                        53816301635110572105000001   012196352
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COMMENTS SUPPRESSED                                                          06357
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FITCLANT                    02000COMMANDING OFFICER                  999180VA46361
/WILLIAM /O. /LECKIE, /JR.                   542163013501310000008530S4   011316362
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PERSONNEL MGMT                        B  025INSTRUCTING                  ET 0206364
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COMMENTS SUPPRESSED                                                          26367
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COMFLTCORGRU TWO            00410INTELLIGENCE OFFICER                999250VA46371
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SPECIAL PLANS COORD HQ LIAISON  EF 050                                     0006374
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COMMENTS SUPPRESSED                                                                06417
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/JOHN /EDGAR /DAVIS                              4321630110599990000099991    007186432
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/VICTOR /S. /SPOTO                               54116301350999900000000414   019036452
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DIRECT SUPPORT TO C6F TASKING   DFJ010DIRECT SUPPORT TO OP TASKING     DFJ0056454
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COMMENTS SUPPRESSED                                                             26457
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INTELLIGENCE CENTER WATCHES      ADE004                                       0006474
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CINCUSNAVEUR                02225SOVIET BLOC NAVIES ANALYST            000611UK46491
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/DEAN /L. /SEDGWICK                                  4301630112099990000000001    003096532
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CURRENT REPORTING                     EG0025                                      0006534
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SUPPORT RQMTS (PHOTO ADP) MGMT  BF0003                                       0006575
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INSTALLATION ANALYSIS  TARGETINGBDI010ROUTE PLANNING                     DIJ0106584
PRODUCTION MANAGEMENT            BDF040                                   0006585
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/WARREN /D. /TURNER                          54216301350999900000000001      019126592
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/JAMES /A. /WARD                             44116301350999900000000002      004506602
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/JOHN /M. /SHERMAN                           43916301100999900000000001      010026612
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/RONALD /C. /SMITH                              43916301350999900000000000147  010486632
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CINCUSNAVEUR              00800COLLECTION FOREIGN EXCH OFFICER N221B000611UK46671
/DONALD /H. /ESTES                              434163013559999999999999991    010136672
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DISCLOSURE OF CLASSIFIED INFO   ADQ025                                         0006674
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/FREDERICK /J. /SKINNER                         43616301350999900000000016    009046682
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/THOMAS /H. /BARR                               43616301100999996409640 1      010146692
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SSO ACTIVITIES                  ABQ003INTELLIGENCE RDTE                    ABC0126695
INTELLIGENCE WATCH OFFICER      ADE008014                                         6696
COMMENTS SUPPRESSED                                                             26697
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/JOHN /W. /SHERMAN                      5431630135013100000000002      008376722
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INTEL DATA HANDLING SYSTEM IDHS BC0010                                   0006725
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RECCE ELINT COLLECTION PLANNING BKL010SUPPORTING AIRCREW PLANS GUIDE  BFL0206745
TARGET ANALYSIS AND NOMINATION  DEJ010000                                    6746
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COMNAVAIRLANT            22200FORCE INTELLIGENCE OFFICER SSO        570120VA46761
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DATA FLOW DISSEMINATION       · ABF999THEATER INTELLIGENCE MANAGEMENT BCF9996774
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COMMENTS SUPPRESSED                                                          16827
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/JAY /SIGMUND, /I/I                         436163013559999999999999235  007296832
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/ROBERT /K. /BUECK                          54413109999999210P9000P47     010486842
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RQMTS FOR NEW EQUIPMENTS          BF 010RQMTS FOR NEW TRAINING          CFT0106854
COMMAND INSPECTION OF RECCE CAP.BF 005                                     0006855
                                    000008                                    6856
COMMENTS SUPPRESSED                                                          16857
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/JOHN /J. /DOWER                             43816351355999900000 8810P15    009276872
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COMMENTS SUPPRESSED                                                             06887
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/ROBERT /OWEN                                4999999999999999999999999       999996892
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CINCLANT                   99999TARGET INTEL PRODUCTION OFFICER            000660VA26911
/LARRY /A. /BURDA                                   330132000000000000000000001     003126912
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WORK ON NEW ADP SYSTEM                   AB0020                                   0006914
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/JAMES /C.#/LE /VANGIE                              4351120000000000000007210P1123790121869 32
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TECHNICAL AND HUMINT SUPPORT             BFH001                                   0006934
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                                              000001                                 6936
COMMENTS SUPPRESSED                                                                 26937
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/L. /N. /JENSEN                              329163013559999999999991    006068002
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JSTPS                      090800PS STAFF OFFICER                  645910NB58011
/D. /J. /DUHKOPF                             6461310999999999999997132S0  100308012
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/E. /P. /CURLEY                              436163011059999999999999917  012228022
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CTF 72                     00800STAFF INTELL OFFICER               999342JP58031
/D. /L. /KITTLEMAN                           53916301350999972 10E9680 438  005088032
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COMMENTS SUPPRESSED                                                           08037
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/J. /L. /PESTER                             33316309999999999210P9210P478   006068042
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/E. /S. /DVORNICK                           43911209999999999998510P4278   100248052
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LIAISON WITH OTHER AGENCIES       EF 020                                      0008054
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/K. /LICHTENBERG                            32716559999999999200T9999927   002368062
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DAILY INTELL SUM MESSAGES          AIJ040                                  0008084
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CINCPACFLT                 02321ASST RECON SUPPORT OFFICER            000702HI58101
/W. /A. /PEZET                                4351120999999997210E9210P4    100338102
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COMMENTS SUPPRESSED                                                          08107
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/H. /W. /LEEKE                                43311209999999999999999999112   100308112
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COMMENTS SUPPRESSED                                                          08117
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TASK GROUP 168.1       20100ASST OIC                                    999152HI58131
/J. /B. /STOCKWELL                         43711101100999972 10E7210E13    002098132
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CONFERENCES                      DEF005                                      0008134
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TASK GROUP 168.1       20000OFFICER IN CHARGE                           999152HI58141
/J. /E. /HARMON                            540163011009999999999999113     008218142
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CONFERENCES                      DEF005                                      0008144
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COMPHIBRON SEVEN          00910INTELL OFFICER                           552814AF58171
/G. /W. /HODAK                                    32913109999999999999998510P4    100048172
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(COLLATERAL DUTY)                100                                          0008174
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/J. /D. /SKILES                                   437111099999997210S999991       001028182
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COMMENTS SUPPRESSED                                                              18187
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/T. /L. /MORGAN                                   436163013551395999999999991     008368192
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TGT LISTS                       DJP055                                        0008194
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COMUSNAVPHIL                 01700INTELL PLANNING                        999352PI58211
/P. /R. /ROCK                                 4361637135599999999999999912    005058212
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LIAISON WITH FOREIGN NATIONALS  EFQ011                                        0008214
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                                    000000                                       8216
COMMENTS SUPPRESSED                                                             18217
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/D. /R. /ZICKAFOOSE                           43416371635110596409680 14     011018222
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FICPAC                       11100HD INTELL SUPPORT DEPT                 631862HI58231
/EDWARD /C. /SCHEINER                         3356631662199999999999999049   100018232
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/I. /A. /WATERS                                 5391630999999999999999991    015188242
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FOSIF WESTPAC             99990HEAD ANALYSIS AND SUPPORT BRANCH            669702JP58251
/TOM /K. /CASSIDY                               4321630163511059999999999916   004338252
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/R. /A. /WILLIAMS                               431163099999997210E9999915     008058262
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FOSIF WESTPAC             00100OFFICER IN CHARGE                           669702JP58271
/R. /C. /ELDER                                  542163099999997210 9999943     017338272
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INTELL SUMMARIES                 AIJ010INTEL TRAINING                       T  0058274
PRODUCTION MNGMNT                ABD015                                       0008275
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COMMENTS SUPPRESSED                                                             08277
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/R. /H. /CHRISTMAN                              4311630112099999999999999991   003128292
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/J. /A. /MARCELY                                43416301350999999999999999435  007298312
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/WILLIAM /A. /GLENN                          543163013201327999999999119   015128322
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INVESTIGATIONS                   ABQ001TECH MATTERS                       DEF0018325
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/JAMES /E. /ULMER                            435163013159999999999999991245  007148332
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/JOSEPH /W. /WILSON                          645111099999999 7210E7210E438    009138372
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/M. /W. /HERBST                               43716309999999997210E999991135  015018382
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USS KITTLY HAWK          99999INTELL OFFICER                          033632CA58391
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/J. /C. /FORD                             43311209999999999999998210S12  100028422
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COMMENTS SUPPRESSED                                                         18427
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/W. /E. /COVINGTON                        43416301350110099999999915    009018432
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                                   000999                                       8826
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